ATLANTA NPU-G
COMMUNITY MASTER PLAN
A Live-Work-Play Approach to Upward Mobility

Georgia Institute of Technology
School of City and Regional Planning
in Cooperation with the Georgia Conservancy

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INTRODUCTION

Atlanta is a showcase city, and has time and again proven itself as a place where people want to live, work, play, and grow. Atlanta has been recognized as willing and able to continually improve itself, from rebuilding the city after Sherman's march to the sea, to the major redevelopment undertaken 130 years later in preparation for the Olympics. The recognition that urban sprawl is draining the City of resources and contributing to drought conditions has refocused attention on improving the City of Atlanta, which has thus far been successful. With accolades like EPA's Landfill Methane Outreach Program's Project of the Year for 2009, and a stated emphasis on sustainable development through the promotion of the Sustainable Atlanta plan, Atlanta has clearly defined policy priorities.

This report focuses on Neighborhood Planning Unit G (NPU-G), a relatively unknown and seemingly forgotten area located just northwest of Atlanta's city center. NPU-G is a neighborhood of contrasts: beautiful natural resources comingle with human-made nuisances; one of the oldest established neighborhoods where residents of 30 or more years still live has a severe lack of everyday-living resources. Containing natural features such as the Chattahoochee River, a rural aspect, and dedicated parks, NPU-G has unique appeal in a city known for its urban greenspaces. However, NPU-G is also known for large tracts of public housing, one of the biggest landfills in the city, and minimal provision of basic services. Although the lack of development in NPU-G has preserved the natural resources already available, it has also created a state of neglect for the residents of the neighborhood.

NPU-G provides the perfect forum for current policy to be implemented and showcased, and for Atlanta to demonstrate the capacity for rebirth for which the city is known. The conditions of NPU-G supply the ideal opportunity for the City of Atlanta to implement sustainable and innovative solutions at lower costs. The lack of existing infrastructure or development provides a clean slate rare for new projects within the city limits. The natural resources, especially the Chattahoochee River, are unique to the area and will generate opportunities unavailable in other neighborhoods, drawing interest in and resources to the area.

This report is broken into five major sections as follows:

- Connections
- Redevelopment
- Opportunities for Advancement
- Food & Culture
- Environment & Natural Amenities

Each of the recommendations made in this report are made with the goal of increasing economic opportunity and livability within NPU-G. As the City shifts into a new phase of development, with emphasis on infrastructure and sustainability, NPU-G is a model candidate for new projects, as follows in this report. The dire conditions and lack of resources in NPU-G make it eligible for matching federal funding programs, which would generate positive attention on a national level for the City of Atlanta if programs are enacted. The neighborhood, which historically has had the highest proportion of children in any NPU, needs help to provide a safe, stable, and sustainable area for raising the next generation of Atlantans. It is time for NPU-G to receive its fair share of resources. It has been neglected by the City for too long.

CONNECTIONS

There are many connectivity issues within NPU-G. Some of these issues stem from the effects of the natural features of the terrain, and some are the result of human-made obstacles. There are vast swaths of open land, which cause areas of the neighborhood to be disconnected from the rest. In addition, there are very few transportation choices within NPU-G, if one does not own a car.

Based on our analysis, we propose solutions ranging from new street connections, to a trailway system, recreation paths, bike trails, and pedestrian safety improvements. To enhance the neighborhood's relationship to the river, while at the same time addressing local needs related to greenspace, exercise, education, and connectivity, we propose a nature and walking trail along the Chattahoochee River and a greenway system along Proctor Creek. To enhance connectivity within the neighborhood, we propose a series of transportation projects, ranging from intersection updates, sidewalk construction and improvements, implementation and expansion of a bike lane network, developing safe routes to local schools for children, and planning for potential transit oriented development.

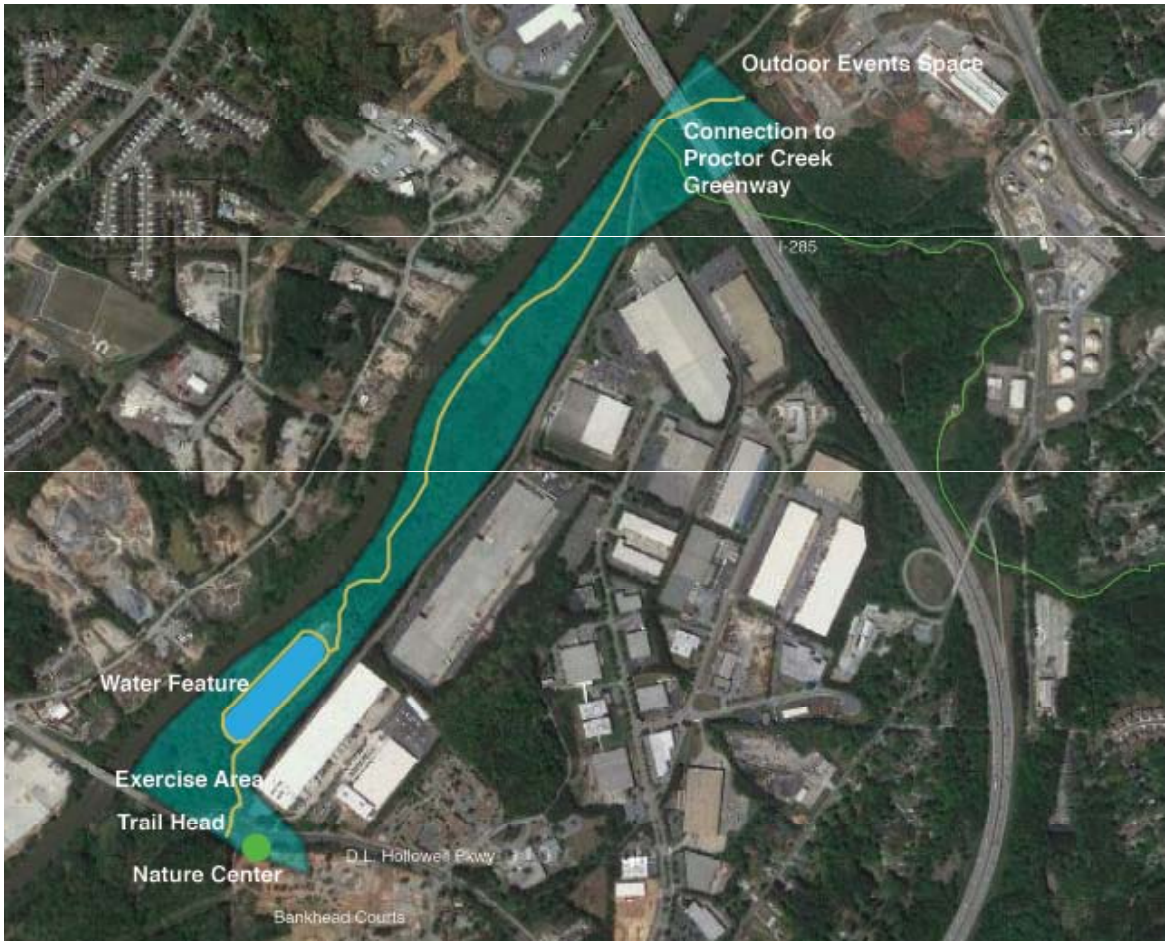
Our overarching goals in all of these proposals are to increase economic development potential, augment accessibility for residents and local businesses, encourage alternative modes of transportation, emphasize safety, increase engagement to natural amenities in the area, and enhance the quality of life.

CHATTAHOOCHEE RIVER TRAIL

The City of Atlanta has long neglected the Chattahoochee River as an asset and potential driver of economic development. Countless other cities have examples of popular and successful riverfront developments. There is a movement toward reclaiming the riverfront, preserving our other natural amenities, and enhancing the greenspace in Atlanta; we propose making that a reality for NPU-G. In addition, because the quality of life in NPU-G has suffered so greatly from negative public sector investments (the large city-owned landfill, an overconcentration of public housing projects as compared to Atlanta's more prosperous neighborhoods), riverfront development, greenspace development, and other economic investments in NPU-G should warrant top prioritization from the City.

A one-mile segment of the Chattahoochee River lies in NPU-G, between Donald Lee Hollowell Parkway and I-285. The entire segment is bordered on the east by the Atlanta Industrial Park. The area of land is almost entirely owned by the Atlanta Development Authority and the Development Authority of Fulton County. The land is heavily forested and ranges in width from about 450 feet to about 600 feet.
To the south are DL Hollowell Parkway and the site of former public housing project Bankhead Courts, and at the north end of the area of land is the site of the former General Shale brick factory. We propose a natural walking trail, anchored on the south end by a nature center and retail development, and anchored on the north end by an outdoor festival/events space.

FIGURE 1: LOCATION OF PROPOSED CHATTAHOOCHEE RIVER TRAIL



Source: Author's creation on Google image

CCP REGULATIONS

Any development or disturbance along the Chattahoochee River must comply with the Chattahoochee Corridor Plan (CCP) guidelines. The river corridor plan was developed by requirement of Georgia's Metropolitan River Protection Act (MRPA). The CCP provides the process through which developers must apply for approval for their proposed projects, and defines standards of conformity and penalties for discordance.

The CCP is in effect for "all land within 200 feet of the bank of the Chattahoochee River including any impoundments thereon, or within the flood plain, whichever is greater, from directly below Buford Dam downstream to the downstream limits of Fulton and Douglas counties, including the entire bed of the river

and any improvements and all islands therein"[1] The plan establishes three sets of standards: buffer zones, floodplains, and vulnerability, all of which must be met for a development to be deemed consistent with the CCP.

CCP specifications:

- 50-foot vegetative buffers.
- No impervious surface can be added within 150 feet of either bank.
- 35-foot vegetative buffer required on both banks of all tributary streams in the corridor, which would include Proctor Creek.
- Maintain current storage capabilities in both the 100-year and 500-year floodplain. No amount of sediment can be added to the floodplain without an equivalent volume being removed, as measured from the natural ground level to the flood elevation level.
- No construction over 35 feet allowed in the 500-year floodplain.

TRAIL SPECIFICATIONS

Since this segment of land is heavily forested and relatively undisturbed, as opposed to the opposite bank, which is located in Cobb County, there are limits to what can be constructed here. However, even with the CCP guidelines, this section of the Chattahoochee can be transformed into an asset for the local community, and for the city as a whole. There is a demonstrated need in the City of Atlanta for more trails, as detailed in Atlanta's Project Greenspace Report.[2] This land is an ideal spot for a primitive fitness and walking trail, anchored on the south by a nature center and on the north by an outdoor festival space. While this plan will not go into details on the outdoor event space, we suggest the site of the General Shale Brick Factory be considered for this. The Project Greenspace Report specifically notes that there is

[1] Atlanta Regional Commission (1998). *Chattahoochee Corridor Plan*. Retrieved on 02 Oct 2010 from http://www.atlantaregional.com/File%20Library/Environment/ep_chatt_corridor_study_7-72.pdf

[2] City of Atlanta Project Greenspace (2009). *Project Greenspace: Embrace your Space Summary Report*. Retrieved on 12 October 2010 from http://www.atlantagreenspace.com/mapsdocs.htm.

a need for an outdoor venue that can host major events, concerts, and festivals in the city. The site at the north end of our river trail would be an ideal location.[3]

We recommend that the trail and land remain as natural as possible, in part, to celebrate the natural amenities of the neighborhood and to provide access to a relatively undisturbed section of the river, and in part, because this land has been identified as undeveloped land with high environmental value in the City of Atlanta's Project Greenspace Report.[4] The example of the type of trail we propose is shown below; it is a segment of the Chattahoochee National River Area at Akers Mill.

FIGURE 2: EXAMPLE OF RIVER TRAIL

Source: Flickr: http://www.flickr.com/photos/peachy92/3519024325/

It is commonplace to use parts of utility easements in building trails, often to connect other trail systems, or to connect places of interest that are not connected by road right-of-way. Current practice advises

[3] City of Atlanta Project Greenspace (2009). *Project Greenspace: Embrace your Space Summary Report*. Retrieved on 12 October 2010 from http://www.atlantagreenspace.com/mapsdocs.htm.

[4] City of Atlanta Project Greenspace (2009). *Project Greenspace: Embrace your Space Summary Report*. Retrieved on 12 October 2010 from http://www.atlantagreenspace.com/mapsdocs.htm.

jurisdictions to think about utility easements as multifunctional space.[5] There is a utility easement that runs north-south and crosses DL Hollowell Pkwy and the Chattahoochee River. This easement crosses DL Hollowell at an ideal spot for the trail to commence. We propose that the trail follow the easement for a tenth of a mile, where it then reaches an existing bi-pooled retention pond. There is a small hill here, but for the most part, the area is flat, and is cleared of trees because it lies in the easement. A plan for improving and utilizing the retention pond is discussed later in the Environment and Natural Amenities section.

In this cleared area, we propose an outdoor exercise facility and a fitness trail, using wooden exercise equipment. The use of wooden equipment is in keeping with the natural, relatively undisturbed, environment that we are trying to maintain in this area. A fitness trail, also called a parcourse, will extend past the clearing along the trail beyond the pond. The first parcourse was built in Zurich, Switzerland in 1968. A parcourse is a path equipped with obstacles or fitness stations along the trail, each designed for stretching, strengthening, cardiovascular work, etc. At each station there is a sign instructing users on how to use the exercise equipment. For suggestions on how to utilize the trail, *Outside Magazine* has written an article, "Parcourse Redux," with examples of training regimens that one can do on a fitness trail.[6] Examples of exercises include calf raises, push-ups, pull-ups, squats, crunches, hip lifts, and more, all of which use just your own body mass, as seen below in Figure 3. Course participants can also do lunges, jump, high-step or run between exercise stations.

Companies like Fit-Trail[7] and Outdoor Fun Store[8] can supply the fitness equipment for the trail, or the community might be interested in constructing the pieces themselves as a community-building and beautification project. There may be opportunities for local hardware stores to donate materials or tools for the project.

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5 Thompson, JW and Sorvig, K. (2008). Sustainable Landscape Construction: A Guide to Green Building Outdoors. Second edition. p 48

[6] Grudowski, M. (2000). "Parcourse Redux: Outdoor fitness tracks provide a retro-cool route to strength and endurance." Outdoor Magazine. Retrieved on 26 October 2010 from http://outsideonline.com/outside/magazine/200005/200005body1.html

[7] www.fittrail.com

[8] http://www.outdoorfunstore.com/commercial-fitness-healthtrek.asp

FIGURE 3: EXAMPLES OF FITNESS TRAIL EQUIPMENT

Source: FitTrail and Outdoor Fun Store

The trail will encircle the pond (pictured in Figure 4), creating a half-mile path around, and will continue on into the trees and travel north, following the river. There is already a path that meanders through the trees alongside the river, between the river and the railroad spur that serves the AIP. We recommend that the trail follows this path, and remains as a dirt trail. Some clearing may need to be done initially to ensure that the path is visible, but we recommend preserving as much of the tree canopy as possible, as increasing tree canopy in the city is one of the goals of the Project Greenspace Plan.[9]

[9] City of Atlanta Project Greenspace (2009). *Project Greenspace: Embrace your Space Summary Report*. Retrieved on 12 October 2010 from http://www.atlantagreenspace.com/mapsdocs.htm.

FIGURE 4: POND AND PROPOSED RIVER TRAIL

Source: Erin Rosintoski

The termination of the trail will be at the north end of these parcels of land. There, the trail will join with the Proctor Creek Greenway system, discussed in the next section. In the future, we propose an outdoor festival or events space to be located here, at the site of the former General Shale Brick Factory. Along the trail, connections should be made to the Atlanta Industrial Park (AIP), which will allow employees to access the trail and will also allow trail users to access amenities in the AIP, like food carts or other retail locations.

PROCTOR CREEK GREENWAY

To better utilize greenspace and create a well-connected community, we propose a multi-use trail or greenway along Proctor Creek. While several existing plans have suggested future development of a greenway along Proctor Creek, this section will detail the benefits, feasibility, connectivity opportunities, and challenges associated with this development.

BENEFITS

Greenways are most commonly defined as a linked network of corridors managed for conservation, recreation, and connectivity.[10] They typically follow features such as rivers, creeks, or streams, and utility or railroad corridors. Although greenways are most commonly seen as a recreational amenity, they are also beneficial to neighborhood connectivity, environmental conservation, stormwater management, and economic development.

Greenways promote healthy lifestyles by providing a safe and inexpensive means for exercise, while also serving as viable alternative transportation corridors connecting key neighborhood nodes, such as parks, schools, and retail to residential areas. Providing an integrated and well-connected network of off-road paths for pedestrians and cyclists is a key aspect of a livable and walkable community. By preserving natural areas within cities, greenways also help to protect wildlife habitat while at the same time serving as hands-on environmental classrooms for the community. Greenways can also help to maintain existing floodplains by preventing soil erosion, as well as serving as a filter for stormwater runoff.

Additionally, greenways can provide economic benefits by increasing the value of adjacent properties, encouraging tourism, connecting residential areas to retail nodes, and generally improving the quality of life for the surrounding neighborhoods. Several studies have shown that greenways increase the value of properties adjacent to or near greenways, help bring economic revitalization to blighted neighborhoods,

[10] Ahern, J. (2003). "Greenways in the USA: theory, trends and prospects. In "Ecological Networks and Greenways: Concept, design, implementation" R. Jongman and G. Pungetti, Editors. Cambridge University Press. Chapter 3.

and create jobs and revenue.[11] In fact, Georgia's own Silver Comet Trail has helped several small communities along the trail become tourist destinations.[12]

Demand and Existing Plans

According to the Project Greenspace Needs Assessment survey conducted by the City of Atlanta in 2007, 84% of responding households listed walking and biking trails as their greatest parks and recreation need. In addition, 55% of households felt that their needs were not met by existing walking and biking trails.[13] Citizens have made it clear that they desire more walking and biking trails and although there are various proposals for greenways throughout the City, there are no specific or formal action plans to develop a greenway along Proctor Creek. However, the Proctor Creek Greenway is included as a planning concept or high-priority future project in several maps and priority recommendation lists within existing plans. These plans include the Atlanta BeltLine Parks and Recreation Plan, the PATH Foundation 20 Year Vision, Atlanta's Project Greenspace, the City of Atlanta 2010 Sustainability Plan, and the Atlanta Strategic Action Plan.

[11] Sherer, P.M. (2003). The Benefits of Parks: Why America Needs More City Parks and Open Space. The Trust for Public Land.

[12] Trails and Greenways Clearinghouse. (n.d.) Economic Benefits of Trails and Greenways. Retrieved from http://www.railstotrails.org/resources/documents/resource_docs/tgc_economic.pdf

[13] City of Atlanta. (2008). Atlanta's Project Greenspace Needs Assessment. Retrieved from < http://www.atlantagreenspace.com/docs/Greenspace_Plan_Needs_Assessment%20Report_DRAFT_2-08.pdf>

FEASIBILITY

The Metropolitan River Protection Act (MRPA) buffer zone restrictions that would affect parts of Proctor Creek fall within the City of Atlanta's restrictions on riparian (creek or riverbank) development. It appears that the construction of a greenway along Proctor Creek can be largely mitigated: according to the *City of Atlanta Riparian Buffer Ordinance,* "multi-use trails, pedestrian bridges, and associated appurtenances listed in the City of Atlanta Comprehensive Development Plan are exempt from most parts of the ordinance, most notably the 75-foot buffer restrictions on most development."[14] However, the impacts of these developments must still be mitigated in accordance with guidance prepared by the Department of Watershed Management that includes, at a minimum, the following options:

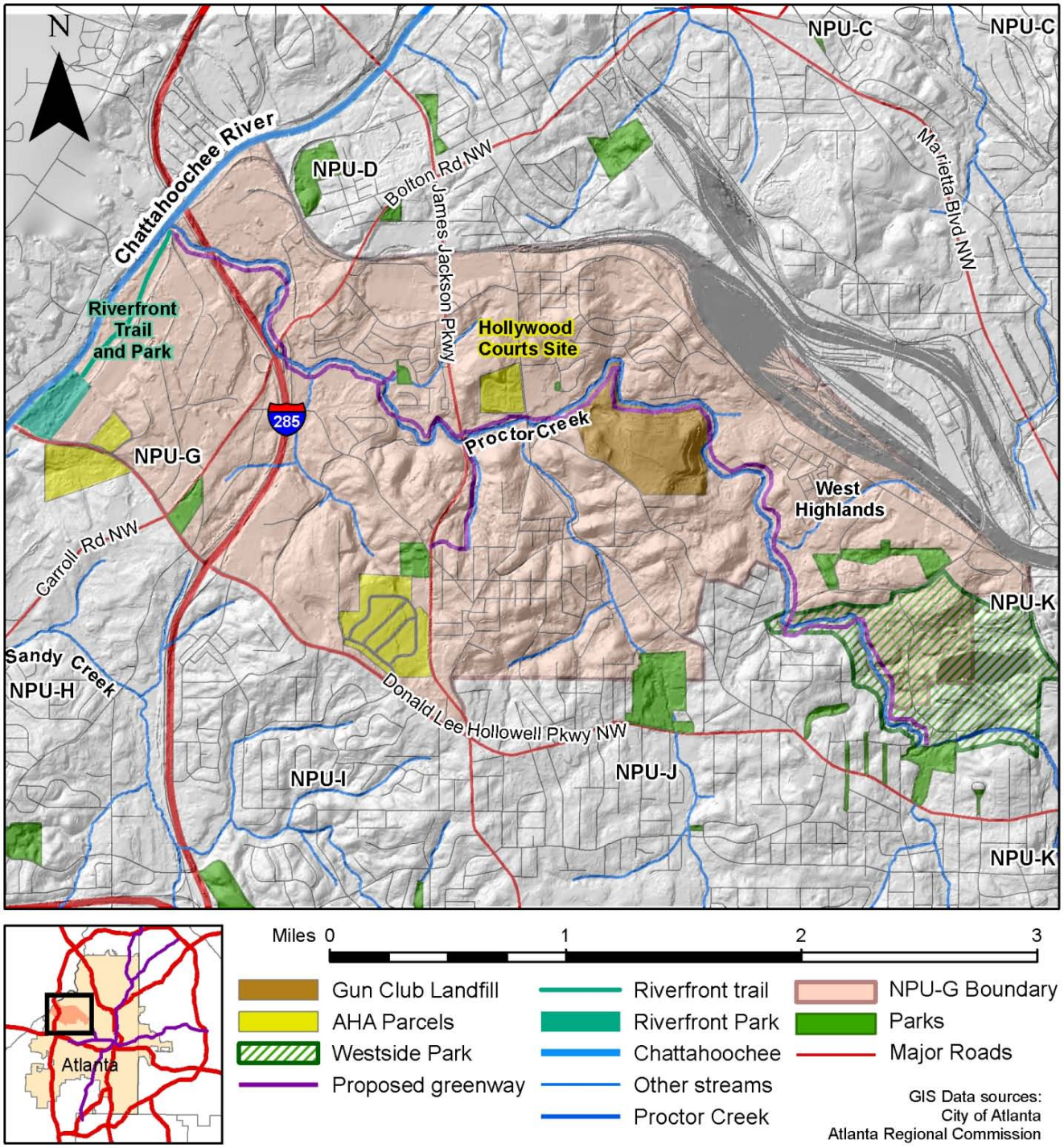
- Stormwater quality improvement measures or stormwater quantity reduction measures as specified by the Georgia Stormwater Management Manual. These are measures that will reduce the pollution contained in stormwater runoff or reduce the amount of runoff itself.
- Stream or wetland restoration. Polluted or otherwise impacted streams and wetlands must be returned to their natural, pristine states and extents.
- Buffer revegetation as specified in the City of Atlanta Buffer Revegetation Guidelines. This includes planting trees and grasses on buffer areas in order to compensate for the removal of trees and/or grasses elsewhere, or to increase stormwater capacity. Reduction of run-off beyond pre-development levels – bring stormwater run-off levels back to their natural levels by removing existing impervious surfaces or other stormwater management techniques.
- Buffer compensation – the creation of additional buffer areas adjacent to parts of the buffer that were impacted by the greenway development.

Additionally, parts of the floodplain along Proctor Creek are subject to *City of Atlanta Wetland Protection Regulations* – if development is proposed within the 50-foot wetlands buffer, US Army Corps of Engineers must review the application to determine if these wetlands fall within their management jurisdiction or if they are managed by the City.[15] This may be more of an obstacle than the *Riparian Buffer Ordinance*, but it is likely that wetland restoration and/or the construction of artificial wetlands could mitigate the problem.

[14] City of Atlanta. (n/d). Riparian Buffer Ordinance. City of Atlanta Code of Ordinances. Chapter 74, Article VII.

[15] City of Atlanta. (n/d). Wetland Protection Regulations. City of Atlanta Code of Ordinances. Chapter 74, Article VIII.

MAP 1: MAP OF PROPOSED PROCTOR CREEK GREENWAY



Source: Author creation

DESIGN SPECIFICATIONS

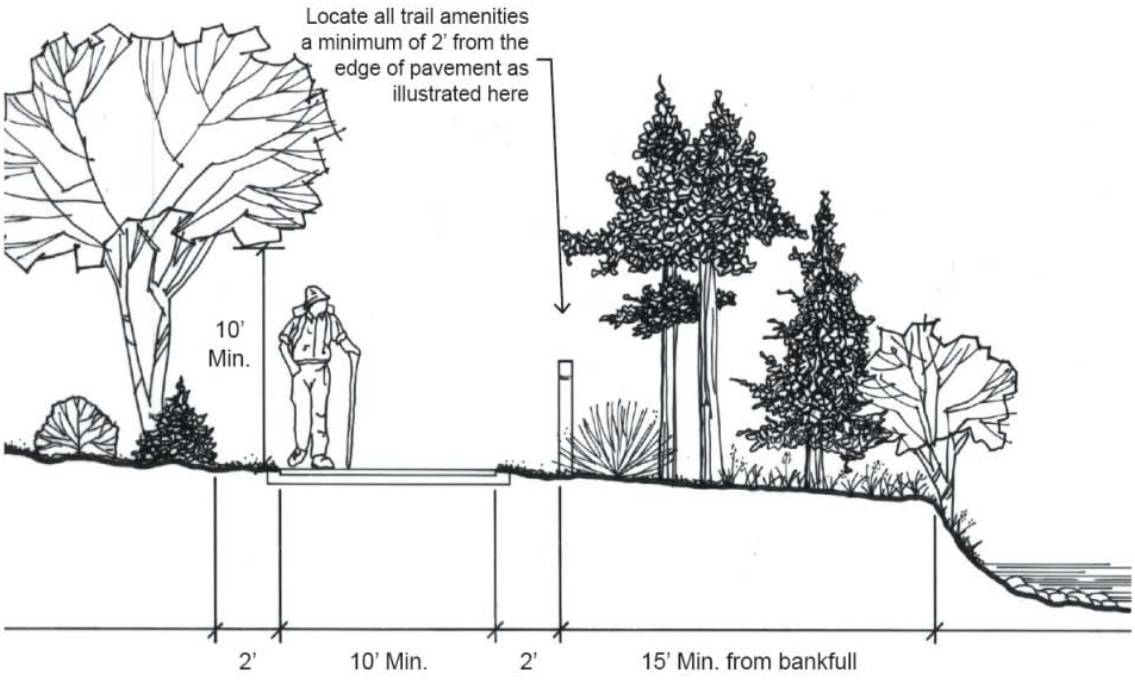
We propose a 10- to 12-foot wide concrete and elevated boardwalk multi-use trail. This type of trail is needed in flood-prone areas and wetlands, as shown the boardwalk example in Figure 5. The trail should be wide enough to allow for the safe passage of cyclists by each other and by pedestrians, but not any wider than necessary, to reduce the amount of impervious surface within the floodplain.

FIGURE 5: EXAMPLE OF A BOARDWALK AT BIG CREEK GREENWAY TRAIL IN ALPHARETTA, GA

Source: City of Alpharetta – Big Creek Greenway Trail: http://www.alpharetta.ga.us/index.php?p=136

Figure 6, below, shows a sample cross-section of design specifications for a multi-use trail along a stream or river. The measurements shown in the drawing do not correspond to City of Atlanta development ordinances; the image is merely an illustration of how the greenway might appear.

FIGURE 6: MULTI-USE TRAIL DESIGN EXAMPLE



General cross section specifications for the Multi-Use Trail

Source: City of Mount Airy, NC – Ararat River Greenway Comprehensive Plan:
http://www.mountairy.org/reeves/greenway.html

Figure 7 shows the existing character of many parts of Proctor Creek, which has several bridge crossings, sanitary sewer pipe crossings, litter, and natural debris.

FIGURE 7: PROCTOR CREEK AT THE JOHNSON ROAD BRIDGE

Source: Atlanta Regional Commission – Proctor Creek Monitoring Locations and Data Map, retrieved from http://www.atlantaregional.com/environment/water/cleaner-streams/chattahoochee-and-flint-river-basins/watershed-improvement-plans

Figure 8 shows examples of how two successful urban greenways have dealt with the challenges of working in an urban setting. The recently completed Little Sugar Creek Greenway in Charlotte, NC is on the left, and the Clear Creek Trail in Wheat Ridge, CO is on the right. These photos illustrate how parts of Proctor Creek Greenway could look. Note how the Clear Creek Trail has used a ramp to lower the trail elevation to create room for a bridge underpass. Proctor Creek has similar bridge crossings within NPU-G, although most of the bridges have more clearance than this example.

FIGURE 8: LITTLE SUGAR CREEK GREENWAY AND CLEAR CREEK TRAIL

Source: National Trails Training Partnership – Cool Trail Solutions http://www.americantrails.org/resources/cool/index.html

CHALLENGES

The primary challenges associated with developing the Proctor Creek Greenway are land acquisition and funding. Although the City of Atlanta has acquired a small number of properties along Proctor Creek for stormwater management as a part of the 1998 Consent Decree, funding for this acquisition project was depleted by 2007 and there are still many properties that need to be acquired.[16] However, there are several options for land acquisition, including purchase or transfer of development rights, fee simple acquisition (the purchase of all property rights), conservation easements, leases, land banking, and land donation. In the case of conservation easements and land donation agreements, the landowner typically receives a special use privilege, a reduction in tax liability, or a cash reimbursement. For further

[16] City of Atlanta. (2009). Atlanta's Project Greenspace Technical Report. Retrieved from < http://www.atlantagreenspace.com/docs/GreenspaceTechnicalReport_vfinal.pdf>

information, see the Atlanta Project Greenspace Technical Document, which outlines the City's plan for greenspace property assessment and methods for preferred acquisition techniques.[17]

Funding is a second, but related challenge. The City will need to procure funding not only for the acquisition of land along Proctor Creek, but also for the construction and maintenance of the greenway. The Atlanta Strategic Action Plan lists several greenspace funding options to be explored,[18] including:

- Park Impact Fees
- Quality of Life Bonds
- Georgia DOT's Wetland Mitigation Banking Program
- General Fund
- Grants
- Donations
- Atlanta/Fulton Land Bank Authority
- Land and Water Conservation Funds
- Park Improvement Fund
- Community Development Block Grants (CDBG)
- Foundations (such as PATH Foundation)
- Perry-Bolton Tax Allocation District (TAD)
- The Parks and Greenspace Opportunity Bond

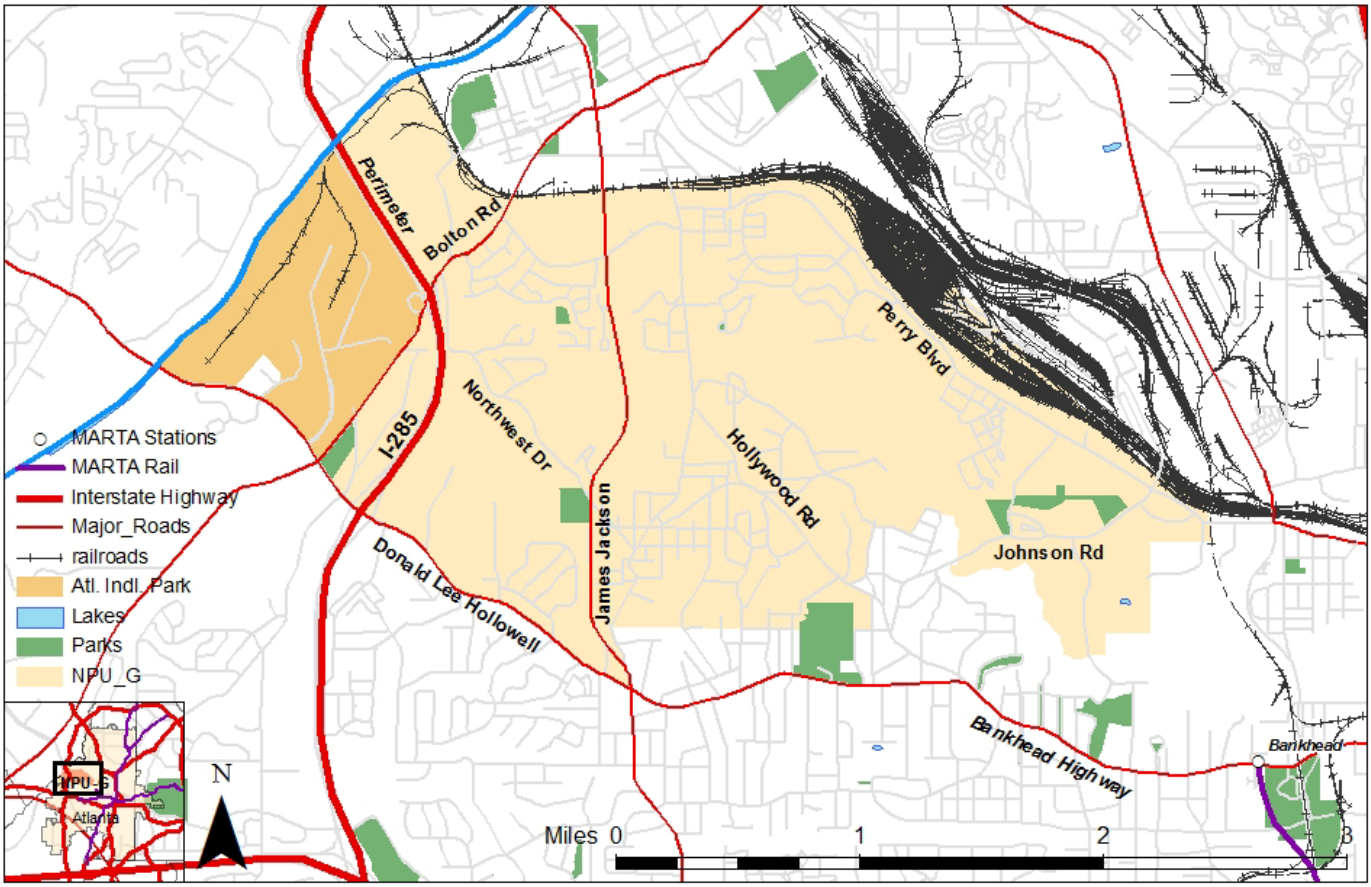
There are many challenges facing greenspace acquisition and development funding for the Proctor Creek Greenway. The first steps are to increase awareness of the greenspace and environmental needs in NPU-G, to initiate a visioning process for Proctor Creek Greenway, and to develop partnerships with organizations that can help the neighborhood realize its goals. There are several organizations that the neighborhood can collaborate with for development; among these organizations are: Park Pride, PATH Foundation, BeltLine Inc, the Upper Chattahoochee Riverkeeper, and the West Atlanta Watershed Alliance.

[17] City of Atlanta. (2009). Atlanta's Project Greenspace Technical Report. Retrieved from < http://www.atlantagreenspace.com/docs/GreenspaceTechnicalReport_vfinal.pdf>

[18] City of Atlanta. (2008). Section 3.3.5 "Community Facilities & Services". In Atlanta Strategic Action Plan. Retrieved from < http://www.atlantaga.gov/client_resources/government/planning/asap/asap_172_266.pdf>

ROADS

MAP 2: NPU-G TRANSPORTATION OVERVIEW MAP



Source: Author's Creation

INTERSECTIONS

The capacity of a transportation system tends to be constrained by its intersections. A poorly performing intersection will limit the access and efficiency of the roads leading to the intersection, causing congestion and minimizing the economic benefits associated with the road. In addition, a poorly performing intersection leads to increased crashes and delays for roadway users. Fortunately, with a few exceptions, automobile traffic in NPU-G is largely unconstrained. The following projects deal only with the few specific junctions where traffic concerns have been identified.

TRAFFIC SIGNAL ENHANCEMENTS

The Donald Lee Hollowell Parkway (D.L. Hollowell Parkway) corridor carries a significant portion of the automobile and freight traffic in NPU-G, and is the primary east-west corridor through the NPU and also between downtown Atlanta and the AIP. Improving travel time reliability on D.L. Hollowell Parkway has the potential to directly address each of the identified Connections goals. The Signal Timing Manual developed by the Federal Highway Administration states that: "Outdated or poor traffic signal timing accounts for a significant portion of traffic delay on urban arterials and traffic signal retiming is one of the most cost effective ways to improve traffic flow and is one of the most basic strategies to help mitigate congestion."[19] In relation to traffic signals on the D.L. Hollowell Parkway corridor, we recommend two specific projects:

- Update D.L. Hollowell Parkway corridor signal timing
- Apply transit signal priority based on vehicle height

UPDATE D.L. HOLLOWELL PARKWAY CORRIDOR SIGNAL TIMING

A relatively low cost method of increasing intersection efficiency, vehicular access, and travel time reliability is updating the signal timing on the corridor. In 2005, as part of the Governor's Fast Forward Transportation Program, a traffic signal management program was introduced. This program was designed to "upgrade and maintain traffic signal equipment and timing for optimal operational efficiency of arterials," including the D.L. Hollowell Parkway corridor.[20] Constantly changing neighborhood demographics have the ability to significantly change neighborhood traffic volumes and travel patterns. Consequently, it is important that signal timing along the D.L. Hollowell Parkway corridor is maintained and updated regularly.

[19] Federal Highway Administration. Signal Timing Manual, June 2008. Publication Number: FHWA-HOP-08-024

[20] Holmes, Carla W. Fast Forward: Full Speed Ahead, September 25, 2006. Presentation at the ITS Georgia/Tennessee Annual Meeting

SIGNAL PRIORITY BASED ON VEHICLE HEIGHT

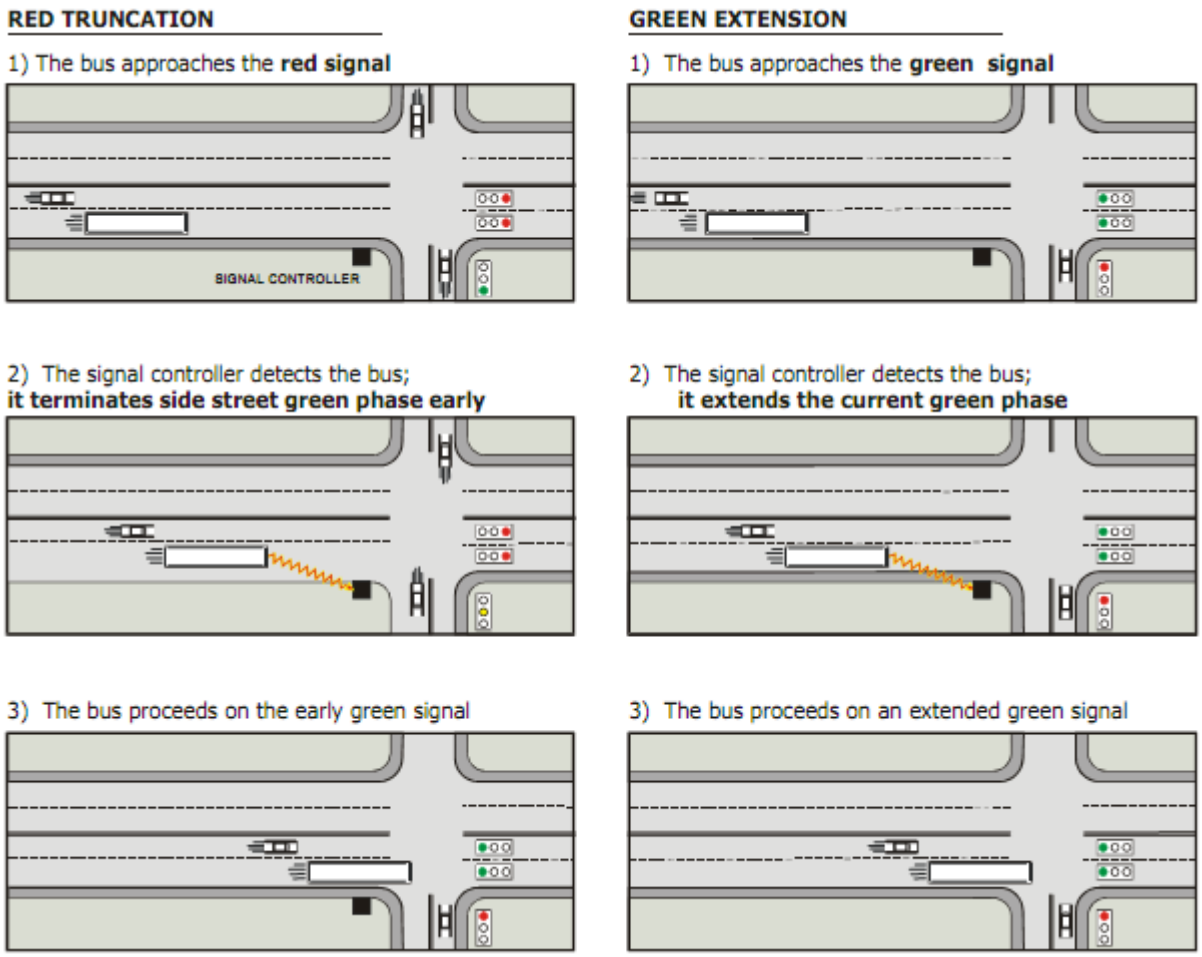
Signal priority gives special treatment to a certain class of vehicles at signalized intersections. While signal priority is generally implemented for transit vehicles, signal priority can also be given to heavy vehicles, like trucks.

Signal priority is accomplished by adjusting the signal timing on the corridor by truncating the red time on the minor streets along the corridor, and extending the green time on the corridor itself. Figure 9, from the Signal Timing Manual, displays the effect of using signal priority to adjust signal timing using red truncation and green extension. As seen in Figure 9, red truncation is accomplished when a bus (or truck) approaches a red signal, and after detecting the vehicle, the signal controller terminates the side street green phase early. Similarly, green extension is accomplished when a bus (or truck) approaches a green signal, and after detection, the green phase is extended to allow the vehicle to proceed through the signal.

Signal priority allows for increased reliability, efficiency, and mobility along the corridor where it is installed. In King County, Washington (Seattle), signal priority and signal optimization reduced transit delay along two corridors by 40%[21]. With the D.L. Hollowell Parkway corridor also serving as a major freight corridor, the project team proposes that signal priority be implemented along the D.L. Hollowell Parkway corridor based on vehicle height, allowing the many heavy vehicles traveling along the corridor to also experience the same benefits as transit vehicles. In addition to improving travel time reliability, signal priority based on vehicle height also has the potential to reduce the starts and stops of heavy vehicles, which improves air quality and reduces the noise associated with starts and stops.

[21] Federal Highway Administration. Signal Timing Manual, June 2008. Publication Number: FHWA-HOP-08-024

FIGURE 9: THE EFFECT OF SIGNAL PRIORITY TO ADJUST SIGNAL TIMING



Source: Signal Timing Manual

ROUNDABOUTS

The modern roundabout is a type of intersection that was developed in the 1960s in the United Kingdom. While roundabout construction in the south has lagged behind the rest of the United States, roundabouts have been used extensively in other regions of the United States since the early 1990s. Currently, over 2,000 modern roundabouts exist in the United States, with many more planned or under construction. As of July 2010, 13 states had over 50 roundabouts, including: Colorado, Washington, Maryland, Utah, Indiana, California, Wisconsin, Arizona, Florida, Kansas, North Carolina, Minnesota, and Virginia.[22] In addition, the state of Georgia has plans to build 50 roundabouts by 2015.[23]

FIGURE 10: ROUNDABOUT IN CLEARWATER, FL

Source: http://safety.fhwa.dot.gov/intersection/roundabouts/presentations/safety_aspects/long.cfm

[22] Pochowski, Alek L. An Analytical Review of Statewide Roundabout Policies and Programs, November 2010. Masters Thesis, Georgia Institute of Technology.

[23] Ibid.

A modern roundabout will always be yield-controlled and tends to be smaller than traffic circles or rotaries that exist elsewhere in the United States. Most roundabouts are 100 to 200 feet in diameter, and are designed to reduce speeds, and accommodate heavy vehicles, including large freight trucks, transit vehicles, and emergency vehicles. Figure 10 displays a roundabout in Clearwater, Florida.

The primary benefit of roundabouts is improved safety. In 2007, the National Cooperative Highway Research Program (NCHRP) Report 572: *Roundabouts in the United States*[24] confirmed earlier findings that showed reduced crash rates at intersections converted to roundabouts.[25] In general, this report found that, "roundabouts have improved both overall crash rates and, particularly, injury crash rates in a wide range of settings (urban, suburban, and rural) for all previous forms of traffic control except for all-way stop control, for which no statistically significant difference could be found."[26]

Another important benefit of the roundabout is that it typically experiences significantly less delay than a signalized intersection that has comparable traffic volumes.[27] At present, drivers in the United States appear to use roundabouts less efficiently than in other countries, making it likely that as drivers in the United States become more familiar with roundabouts, operations will continue to improve.[28] Due to the safety and operational benefits associated with roundabouts, the Georgia DOT recently released an updated policy regarding roundabouts[29]:

24 Rodegerdts, L., Kyte, M., List, G., Flannery, A., Troutbeck, R., Brilon, W., et al. (2007). NCHRP Report 572: Roundabouts in the United States. Washington D.C.: National Cooperative Highway Research Program.

25 Robinson, B. W., & Bared, J. G. (June 2000). ROUNDABOUTS: An Informational Guide. Mclean, Virginia: Federal Highway Administration.

26 Rodegerdts, L., Kyte, M., List, G., Flannery, A., Troutbeck, R., Brilon, W., et al. (2007). NCHRP Report 572: Roundabouts in the United States. Washington D.C.: National Cooperative Highway Research Program.

27 ibid

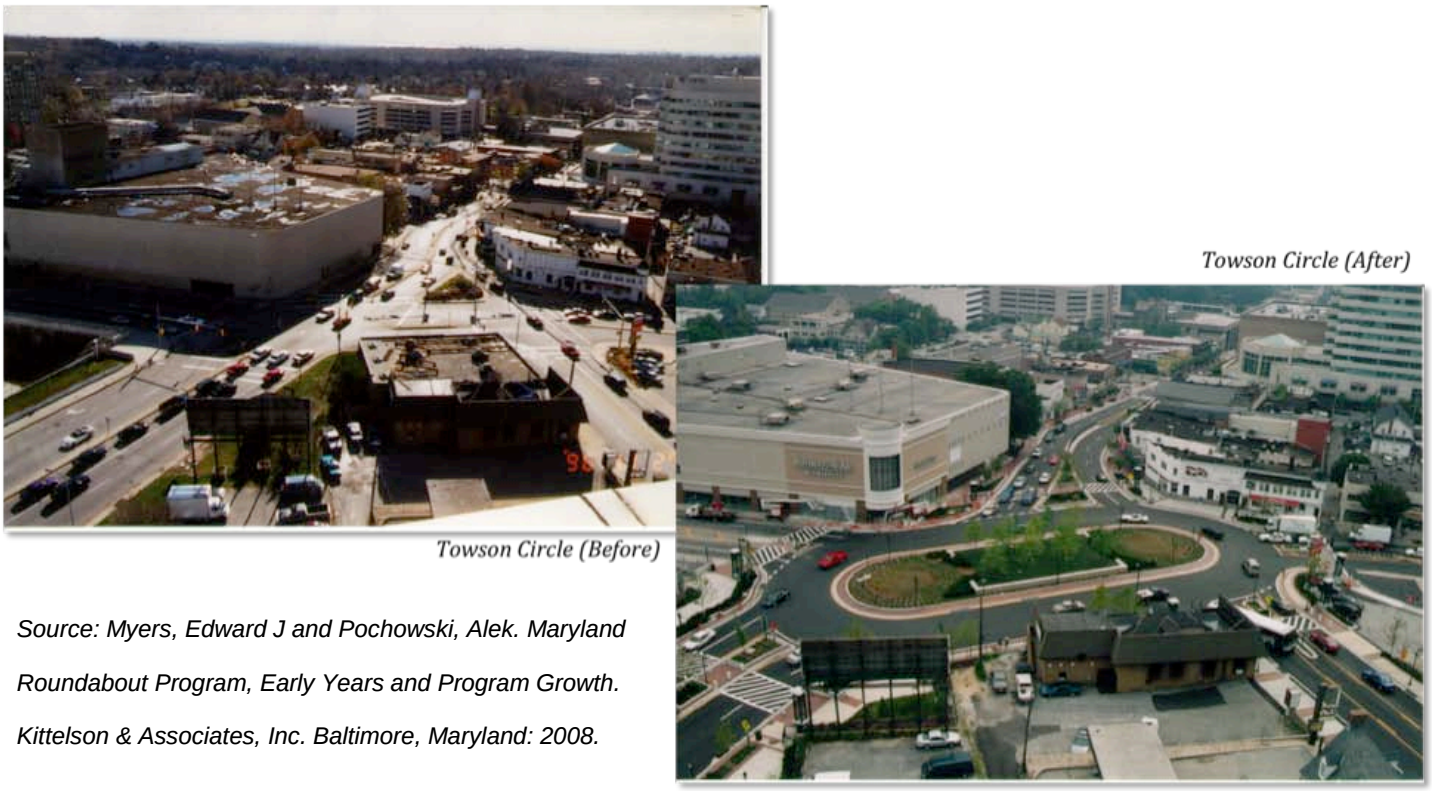
28 Pochowski, Alek L. An Analytical Review of Statewide Roundabout Policies and Programs, November 2010.

29 Georgia Department of Transportation. Modern Roundabouts in Georgia. Georgia Department of Transportation. [Online] September 2009. [Cited: October 15, 2010.] http://www.dot.state.ga.us/travelingingeorgia/roundabouts/Documents/Modern_Roundabouts_in_Georgia.pdf.

Roundabouts are the preferred safety and operational alternative for a wide range of intersections of public roads. A roundabout shall be considered as an alternative in the following instances: (1) Any intersection in a project that is being designed as new or is being reconstructed. (2) All existing intersections that have been identified as needing major safety or operational improvements. (3) All signal requests at intersections (provide justification in the Traffic Engineering Study if a roundabout is not selected).

Anecdotal evidence shows that roundabouts have the ability to increase economic development near the implemented roundabout and improve air quality by reducing vehicular delay. For instance, when the Towson Circle replaced two closely spaced traffic signals in Towson, Maryland, several vacant buildings adjacent to the new roundabout were redeveloped. Figure 11 displays the Towson Circle before and after construction.

FIGURE 11. BEFORE AND AFTER PICTURES OF THE TOWSON CIRCLE IN TOWSON, MARYLAND



Source: Myers, Edward J and Pochowski, Alek. Maryland Roundabout Program, Early Years and Program Growth. Kittelson & Associates, Inc. Baltimore, Maryland: 2008.

Life-cycle cost analysis comparing roundabouts to other intersection alternatives show that roundabouts tend to provide more benefit and cost less than stop-controlled or signal-controlled intersections.[30] A roundabout can also be used as a gateway feature, providing a clear visual signal to motorists that they are entering a particular area or neighborhood. Figure 12 displays a roundabout built in Asheville, North Carolina that serves as a gateway to downtown.

FIGURE 12. A ROUNDABOUT USED AS A GATEWAY IN ASHEVILLE, NORTH CAROLINA

Source: http://safety.fhwa.dot.gov/intersection/roundabouts/presentations/safety_aspects/long.cfm

[30] Myers, Edward J and Pochowski, Alek. Maryland Roundabout Program, Early Years and Program Growth. Kittelson & Associates, Inc. Baltimore, Maryland: 2008.

According to the Kansas Roundabout Guide, the following locations are sites where roundabouts are often advantageous:[31]

- Intersections with historical safety problems.
- Intersections with relatively balanced traffic volumes.
- Intersections with a high percentage of turning movements.
- Commercial development or urban area.
- Intersections where a community enhancement may be desirable.
- Intersections or corridors where traffic calming is a desired outcome of the project.
- Intersections where widening one or more approach may be difficult or cost-prohibitive, such as at bridge terminals.
- Intersections where traffic growth is expected to be high and future traffic patterns are uncertain.
- Locations where the speed environment of the road changes (for instance, at the fringe of an urban environment).
- Locations with a need to provide a transition between land use environments (such as between residential and commercial uses).
- Roads with a historical problem of excessive speeds.

Within NPU-G, the following sites have been selected as potential candidates for a roundabout:

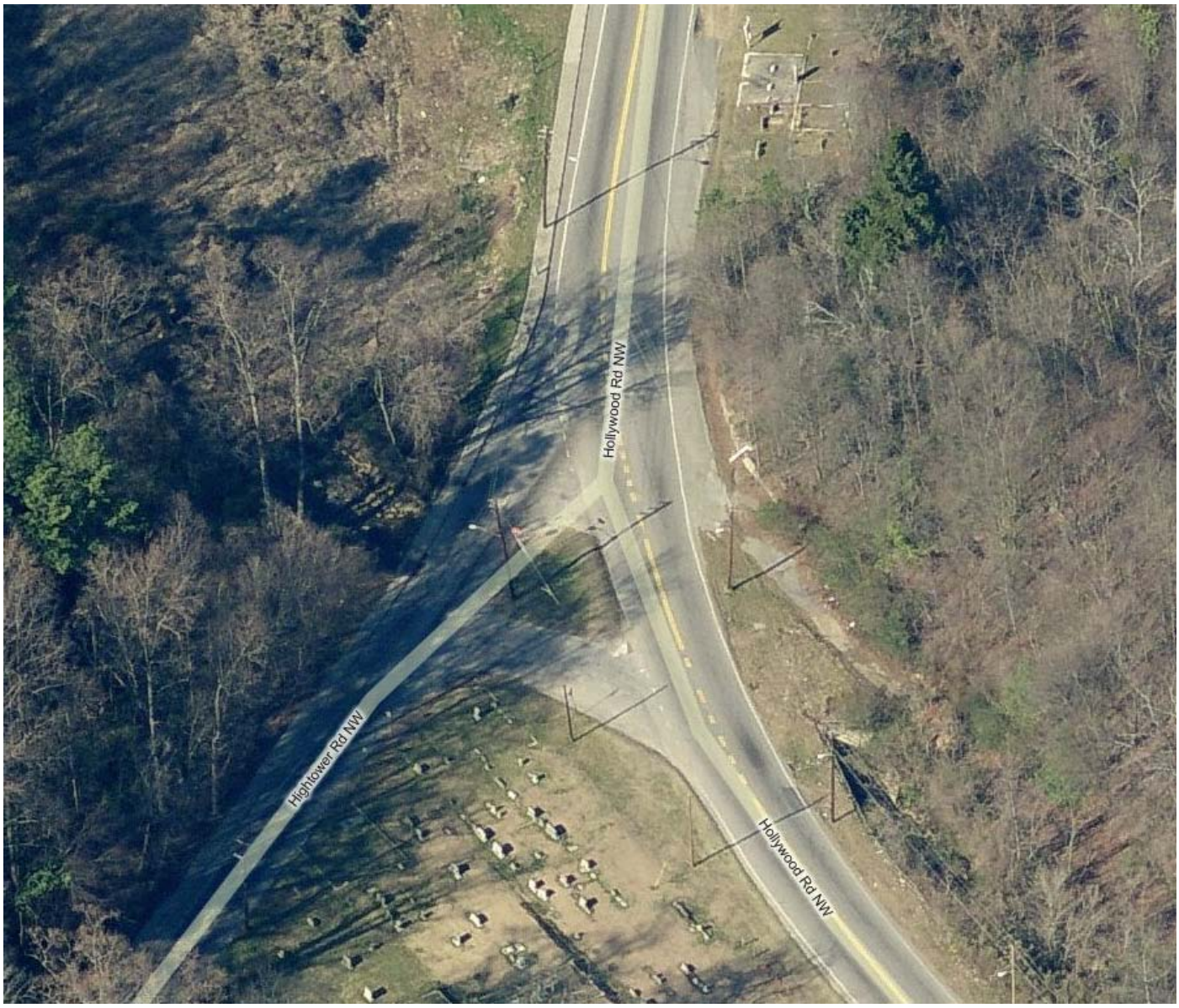
- The D.L. Hollowell Parkway/I-285 Interchange Ramp Node Terminals (subsequently discussed)
- The Hollywood Road/Perry Boulevard Intersection (shown in Figure 13)
- The Hightower Road/Hollywood Road Intersection (shown in Figure 14)

[31] Kansas Department of Transportation, Kansas Roundabout Guide, A Supplement to FHWA's Roundabouts: An Informational Guide, Jun 2000. Page 38

FIGURE 13: HOLLYWOOD ROAD/PERRY BOULEVARD INTERSECTION

Source: Bing.com

FIGURE 14: HIGHTOWER ROAD/HOLLYWOOD ROAD INTERSECTION



Source: Bing.com

D.L. HOLLOWELL PARKWAY/I-285 INTERCHANGE

The D.L. Hollowell Parkway/I-285 Interchange is a key gateway to the Atlanta Industrial Park—one of Atlanta's largest employment centers. Workers throughout the metropolitan area, as well as, freight and delivery trucks from the metro and the United States use the D.L. Hollowell Parkway/I-285 Interchange daily. The project team has looked at a variety of concepts for improving the D.L. Hollowell Parkway/I-285 Interchange.

In addition to roundabouts at the D.L. Hollowell Parkway/I-285 Interchange, we recommend a diverging diamond interchange (DDI). The DDI was named one of the best innovations of 2009 by the magazine Popular Science. The magazine explains:

> *"The [DDI] does away with risky left turns. The street approaching the highway now diverts to the left, and cars get uninterrupted access to the highway, which, experts say, can reduce clogging by as much as 60 percent. Drivers who want to turn left onto the highway can do so without crossing oncoming traffic. Through-traffic, meanwhile, stays on the left side of the road until it reaches a second stoplight, where it passes back over to the right. The Federal Highway Administration estimates that the diverging diamond configuration, the first in the U.S., enables 600 left turns onto the freeway per hour per lane—double that of an ordinary interchange, where drivers cross oncoming traffic."*[32]

Figure 15 displays an existing DDI in Springfield, Missouri, and Figure 16 displays the proposed DDI with roundabouts at the D.L. Hollowell Parkway /I-285 interchange.

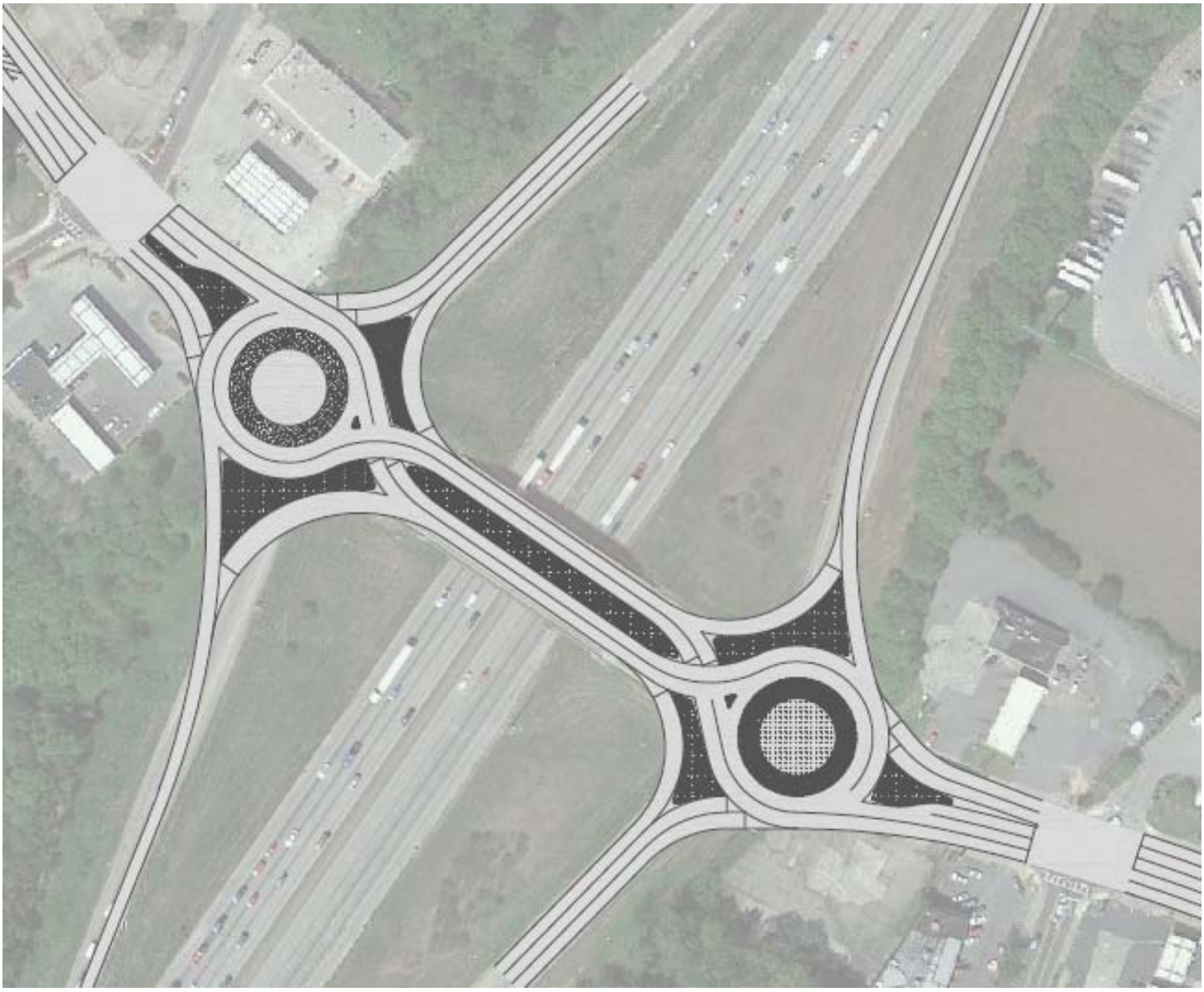
The proposed DDI at the D.L. Hollowell Parkway /I-285 interchange would also serve as a gateway to both the AIP, and to NPU-G on the eastside of I-285. The innovative use of a DDI with roundabouts as a gateway treatment would also allow this long-neglected area to be placed in the public eye, and encourage economic development near the interchange. There would be public art in the central island of the western roundabout to denote the AIP and the importance of industry to Atlanta, and in the central island of the eastern roundabout, public art would represent some significant aspect of NPU-G history.

[32] http://www.popsci.com/bown/2009/product/diverging-diamond-interchange

FIGURE 15: DIVERGING DIAMOND INTERCHANGE, SPRINGFIELD, MISSOURI

Source: http://www.divergingdiamond.com/

FIGURE 16: PROPOSED DIVERGING DIAMOND INTERCHANGE AT DL HOLLOWELL AND I-285



Source: Author's creation on Google image

STREET CONNECTIONS

The street network of NPU-G is characterized by superblocks of rural roads only partly filled with neighborhood street networks. Making a few key street connections has great potential for tying the community together.

ALVIN DRIVE TO WEST HIGHLANDS

The redevelopment of Perry Homes has proven to be a positive change for this community. However, the West Highlands development remains quite isolated due to its position between Proctor Creek and the railroad yards. It is currently accessible only by Perry Boulevard and by a connection to Johnson Road via Habershal Road.

The site plan for the remainder of the development for West Highlands should be amended to include a connection across Proctor Creek toward the west. A bridge over Proctor Creek into West Highlands already exists so there is only a need to extend Alvin Drive from Gun Club Drive along the AHA's existing right-of way. Since this route runs along the northern edge of Gun Club Park, Alvin Drive could serve as an entryway to this area should it be re-opened or redeveloped in the future. The Alvin Road extension crosses a hill in a low, wooded valley making this route both pleasant and convenient for bicyclists. An example of this connection is shown in Figure 17.

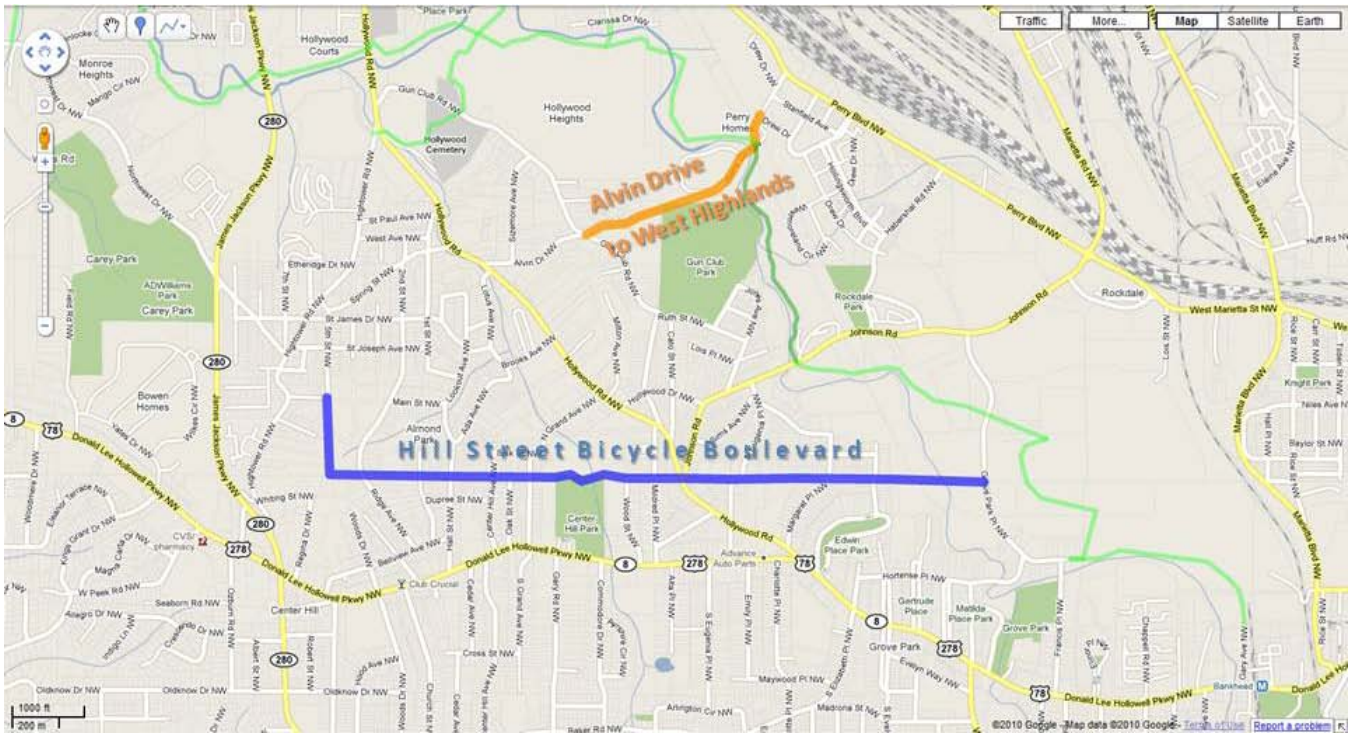
HILL STREET BICYCLE BOULEVARD

The Carey and Almond Park neighborhoods were originally platted as a tight grid of small streets. However, although a number of the streets were never built, the right-of ways still remain. While many of these un-built streets are too short to be of much use to automobile traffic, the right-of-way could be used to create bicycle and pedestrian paths between the neighborhoods. Of particular interest is the right-of-way along the southern boundary of NPU-G. By virtue of the how the original farm tracks were divided, this right-of-way forms a long, continuous, straight line – that coincidentally lines up with 8th Street in Midtown.

The City of Atlanta should study such a connection along their right of way for the un-built sections of 5th Street and Hill Street / Summit Avenue / Newman Place, passing through Center Hill Park. This route would connect the residential portions of Carey Park and Almond Park in NPU-G, and Center Hill and Grove Park with the Center Hill Park. This connection would also connect these neighborhoods with the proposed Quarry Park along the Beltline and a possible Proctor Creek Greenway. This connection is shown in Figure 17.

Residential streets are already developed along some parts of this route. It is not likely that neighbors would approve of converting the entire length of this route to automobile travel. However, existing street segments could be connected with multi-use, pedestrian and bike, trails to form a “bicycle boulevard.” While this route is rather hilly, it does provide a direct route that parallels Donald Lee Hollowell, allowing cyclists an alternative route. In many places, the right-of-way along DL Hollowell is too narrow to allow for a bike lane in addition to automobile through lanes, storefront sidewalks, and a bus lane for the potential BRT service. An alternate route parallel to DL Hollowell could be beneficial and desirable to NPU-G residents who need access to the Bankhead MARTA Station by bicycle. Moreover, this connection could increase the cohesion between neighborhoods.

FIGURE 17: PROPOSED NEIGHBORHOOD CONNECTIONS



Source: Author's creation on Google image

CONNECTIONS FROM ATLANTA INDUSTRIAL PARK

There remains significant disconnection between job opportunities in the industrial park and employment among neighborhood residents. The same disconnection is evident in the physical infrastructure: AIP is isolated from the community. There is only one entrance to the Industrial Park, and while this intersection is close to the highway ramp, it is disconnected from potential workforce housing. This means that those who might otherwise choose to live in the adjacent neighborhoods experience no benefit from being able to walk to work. This dependence on a single roadway is detrimental to businesses as well; emergencies on the entry road can temporarily block off a manufacturer's access to and from their plant, undermining reliable access to the businesses. It may also be a concern of public safety and efficiency in routing busses and other services through the AIP.

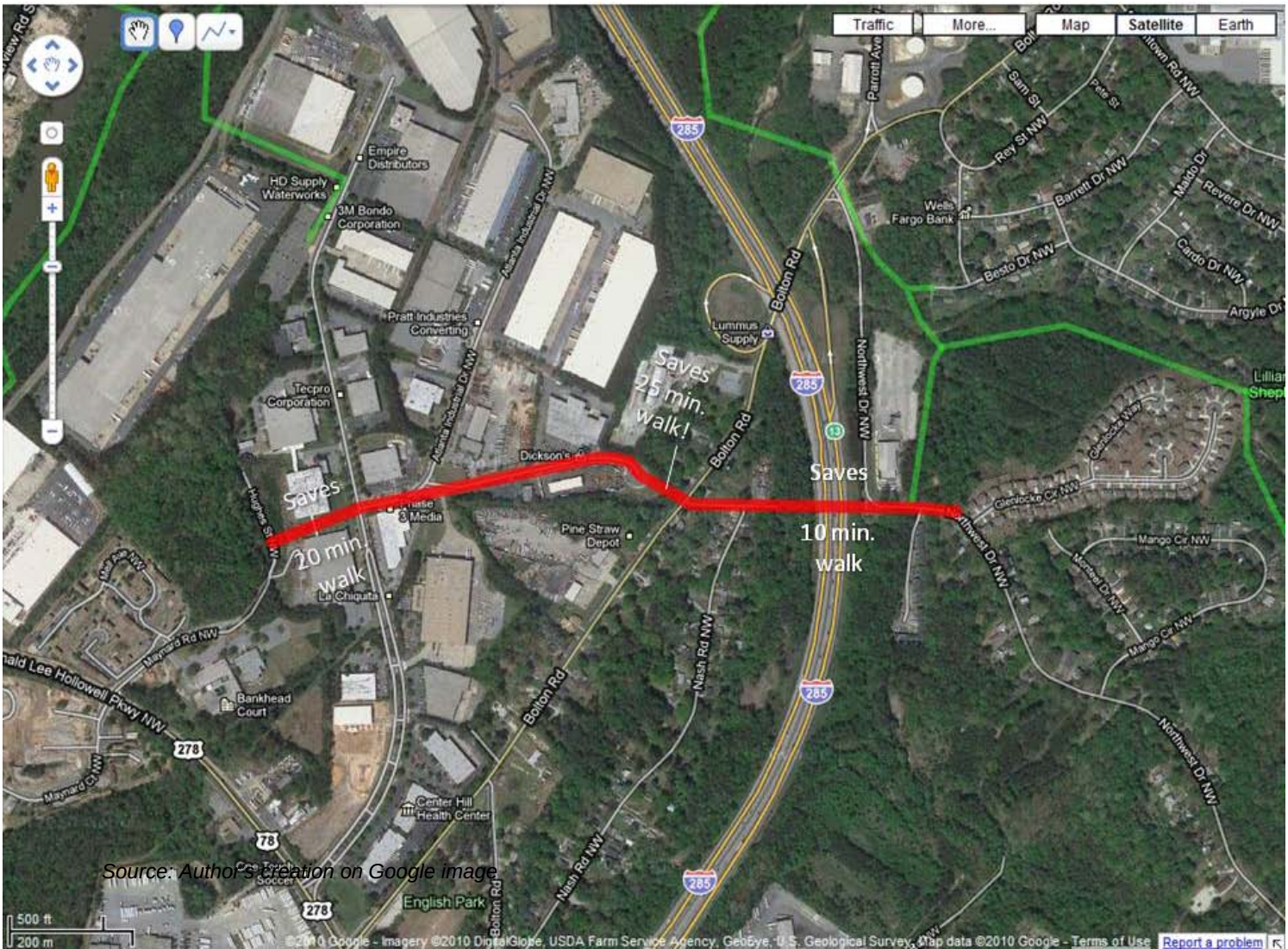
The AIP master plan should be amended and subsequent development should be required to create road connections to Atlanta Industrial Way suitable for pedestrian and occasional truck traffic. This will provide an alternate route for emergency vehicles to enter the park, or a detour route for trucks should a street

need to be closed off. This could also lead to increased demand for AIP workforce housing in the former Bankhead Courts area and the English Park neighborhood.

In the future, if Georgia DOT reconstructs the Exit 13 ramps between I-285 and Bolton Road, the community should petition for a bridge to re-connect Northwest Drive across I-285. This would provide the residents of Monroe Heights with better access to AIP and English Park. A road crossing would also create a safer alignment for the intersection of Northwest Drive and Bolton Road, resulting in improved travel time for busses traveling on Northwest Drive.

An example of the proposed connections is shown in Figure 18.

FIGURE 18: PROPOSED CONNECTIONS TO THE ATLANTA INDUSTRIAL PARK



Source: Author's creation on Google image

NON-MOTORIZED ALTERNATIVES

The following section describes projects designed to reduce the dependency on automobiles in NPU-G through non-motorized alternatives.

PEDESTRIAN CROSSING OVER THE CHATTAHOOCHEE RIVER

A possible trail connection across the Chattahoochee River could be beneath Interstate-285. The Belle Isle pedestrian bridge beneath the Robert E. Lee Bridge in Richmond, Virginia illustrates this possibility; a pedestrian bridge is suspended from cables beneath US-1/301. In this case, the highway bridge was designed with the attachments for the cable support in place,[33] and the pedestrian bridge was built shortly thereafter using various funding sources. The pedestrian bridge was opened in the spring of 1991, and has intrigued visitors and offered unique views of the city.[34] A similar bridge design might be desirable for crossing the Chattahoochee, providing engineers find constructing such a structure to be feasible.

FIGURE 19: BELLE ISLE BRIDGE.[35]

[33] Tang, M-C Olsson, N D Chan, Y-K and Lang, P J. abstract of "Robert E. Lee Bridge, Richmond, Virginia" TRR 1991 retrieved from tris.trb.org/view.aspx?id=358975.

[34] Denenberg, David. "Belle Isle Pedestrian Bridge". Retrieved from www.bridgemeister.com/pic.php?pid=126.

[35] Daniel, "Exploring Richmond" May 6th Discovering Urbanism. Retrieved from discoveringurbanism.blogspot.com/2009/05/exploring-richmond.html.

SIDEWALKS

NPU-G currently lacks sidewalks. Many of the residential areas in the neighborhood, whether on one or both sides of the street, have limited or no sidewalks. The presence of sidewalks provides a safe place for pedestrians to walk, and also decreases the vehicular crash rate.[36]

BIKE FACILITIES

NPU-G is deficient in bike lanes and bike paths. While bikes can commonly share the road with motorists on streets with posted speed limits of less than 25 miles-per-hour, it can be difficult for cyclists to share the road on streets with faster speed limits. Additionally, increased speeds are typically correlated to increased traffic volumes, making it difficult for bikes to travel safely. We suggest that all streets in NPU-G with posted speed limits greater than 25 mph be considered as possible locations for the addition of a bike lane. On streets where a bike lane is not feasible, alternatives, such as bike paths and trails, or parallel lower speed streets, should be considered.

SAFE ROUTES TO SCHOOL

Safe Routes to School (SRTS) is an initiative funded by the federal transportation bill SAFETEA-LU, and administered by individual states. The goal of SRTS is to increase the number of children in grades K-8 who walk and bike to school. In addition, the implementation of SRTS has found that SRTS helps to reduce congestion and increase safety near participating schools, reduce air pollution en route to and near participating schools, and increases the physical activity of children.[37]

The State of Georgia has a Safe Routes to School Resource Center, which works with elementary and middle schools to create opportunities for children to safely walk and bicycle to school. School communities who become partners will receive free support from Resource Center staff in identifying

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[36] McMahon, Patrick J.; Charles V. Zegeer, Chandler Duncan, Richard L. Knoblauch, J. Richard Stewart, Asad J. Khattak (2002) (PDF). AN ANALYSIS OF FACTORS CONTRIBUTING TO "WALKING ALONG ROADWAY" CRASHES, RESEARCH STUDY AND GUIDELINES FOR SIDEWALKS AND WALKWAYS. Federal Highway Administration. FHWA-RD-01-101.. Retrieved 2008-03-24.

[37] http://www.dot.state.ga.us/localgovernment/fundingprograms/SRTS/Pages/default.aspx

activities centered on Evaluation, Encouragement, Education, Engineering and Enforcement.[38] Currently, no schools in NPU-G are partner SRTS schools. All schools are eligible to apply online to be a part of the program, and we recommend that NPU-G's elementary and middle schools apply to become partners of the SRTS program.

TRANSIT

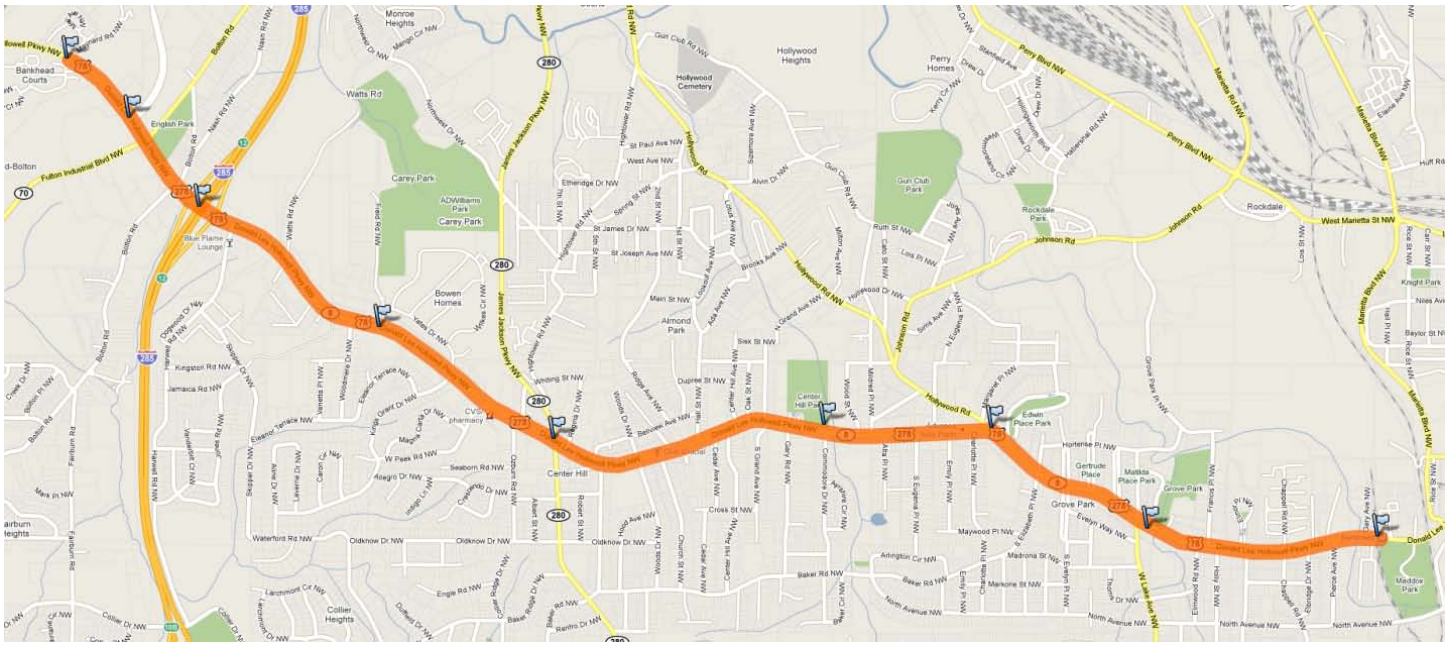
D. L. HOLLOWELL PARKWAY BUS RAPID TRANSIT

In 2008, the Transit Planning Board (now the Transit Implementation Board) developed Concept 3, the Atlanta region's long-range transit vision. Concept 3 was adopted by numerous agency partners, including ARC, GRTA, and MARTA.[39] Contained within Concept 3 was a proposal for arterial Bus Rapid Transit (BRT) service on D.L. Hollowell Parkway from the Bankhead MARTA station to I-285. Based on the recommendation by the Transit Planning Board, a BRT route on D.L. Hollowell Parkway was examined by the transportation project team, and a proposed route is displayed in Figure 20. Unlike the Concept 3 proposal, the proposed route displayed in Figure 20 is extended to the AIP and Bankhead Courts site.

[38] http://www.dot.state.ga.us/localgovernment/fundingprograms/SRTS/Pages/default.aspx

[39] http://www.transitboard.org/concept3

FIGURE 20: PROPOSED D.L. HOLLOWELL BUS RAPID TRANSIT



Source: Author's creation on Google image

The proposed Concept 3 plan also did not include station locations. Therefore, the transportation project team identified nine potential station locations along the corridor as a starting point for the BRT proposal. The actual station locations would likely be developed through an intensive public participation process, however many of the identified station locations are likely to end up as final choices. The identified station locations in order from east (Bankhead) to west (Bankhead Courts) are:

- Bankhead MARTA station
- Grove Park
- Hollywood Road
- Center Hill Park
- James Jackson Parkway
- Bowen Homes
- I-285
- Atlanta Industrial Park
- Bankhead Courts

It is important to note that a key element of BRT is fewer stops compared to traditional bus service. By limiting the number of stops, the delay associated with boarding and alighting is reduced. Consequently, travel times are decreased, while travel time reliability is increased.

Several other factors that differentiate BRT from traditional bus service are identified below:

- **Bus only lanes:** BRT will typically operate in a dedicated bus lane, allowing the bus to operate without interference from other modes of traffic.
- **Transit Signal Priority:** BRT will typically have Transit Signal Priority, which was discussed in a previous section of this report.
- **Quality of Service:** BRT will typically have much smaller headways (time between transit vehicles) than traditional bus service, and operating hours will be extended.
- **Stations:** The stations of a BRT system will be of a much higher quality than traditional bus service, and have a feel of permanence with platforms and other amenities commonly only found at rail-transit stations.
- **Fare Collection:** BRT service will typically have off-bus fare collection, which minimizes the delay associated with collecting the fare on bard the vehicle. Off-bus fare collection also allows for passengers to board quickly through all doors of a stopped bus.
- **Low-Floor Boarding:** A BRT systems will commonly use low-floor buses to allow for faster passenger boarding, and to enhance accessibility for passengers with disabilities.
- **Real-Time Information:** Real-time information showing the time until the next bus arrives at a station is commonly found on BRT systems.

MARTA From Bankhead to Cumberland

As described in the background report, various plans pose competing visions for transit in Northwest Atlanta. The Proctor Creek MARTA heavy-rail (HRT) line that was originally envisioned continuing from Bankhead station to Perry Homes (now West Highlands), has fallen off the radar, though some proposals revive it in different fashions. Currently, rapid transit – such as Light Rail Transit (LRT) – along I-75 seems to be the favored plan among leaders in the Metro Atlanta region.

To remedy this divergence of plans, a compromise alternative is proposed: Instead of connecting Cobb County to the MARTA rail system via the I-75 route, the current MARTA line could be extended from Bankhead Station to West Highlands. From this point, a rail line could be constructed in the freight rail right-of-way parallel to the CSX tracks to Cumberland and beyond (Smyrna, Marietta, and Kennesaw). This alternative has considerable merit:

First, it is likely to be of comparable cost to the I-75 LRT project. Some favor LRT over HRT because they believe it is less costly; however, this is not necessarily the case. The main additional cost of HRT over LRT comes from the need to elevate tracks with a 3rd rail at road crossings. However, by following existing rail lines (which go under bridges), much of this cost increase can be avoided. The only major elevated portions required would be for crossing Johnson Road, Perry Boulevard, and the Norfolk Southern and CSX rail yards. The total length of elevated track might be kept as short as one mile.

Secondly, the Proctor Creek - CSX extension could provide better service. This line would feed directly into MARTA heavy-rail, without needing an additional transfer at the Arts Center Station.

Third, this particular routing provides an empowering linkage between low-income, transit-dependent workers on Atlanta's Westside with ample service and retail jobs in the suburbs. This is desirable not only from the worker's point of view, but also that of businesses that want to be able to pull from a larger pool of workers those most qualified. Besides the social-equity value of this alternative, the opportunities offered by this connection could lead to higher ridership levels than with an I-75 connection, giving this routing a better pay-back. Moreover, choosing such a route that could overcome the historic divide between suburban business and inner-city populations may make this project more favorable for federal funding.[40]

This alterative will not be considered unless it is advanced by those in the community. Current plans for a rail connection to Cobb County do not consider the Proctor Creek - CSX routing. This routing should be considered before any such project to pass environmental review, as the Environmental Impact

[40] "FY 2009 New Starts and Small Starts Evaluation and Rating Process" Federal Transit Administration. July 20, 2007. Retrieved from www.fta.dot.gov/planning/newstarts/planning_environment_9063.html#IIF_Other_Factors.

Statement (EIS) is required to evaluate “all practicable and feasible alternatives” (National Environmental Policy Act). Alternately, MARTA would consider a community petition for a planning study.

TRANSIT-ORIENTED DEVELOPMENT

The concept of Transit Oriented Development (TOD) involves two concepts: First, that development coincides with transit service, and second, that development is concentrated in nodes. Nodal development provides unique benefits, as it actually improves accessibility by putting a number of people and their destinations in close proximity.

TOD involves a mix of land uses; a variety of housing types, shops, offices, and public services. TODs in NPU-G would need to have a density of at least 15 residential units per acre or 25 employees per acre, which is considered the minimum for bus TODs. TODs are typically laid out such that the edges of the development are still about a quarter mile (five-minute walk) from a central point. In order to maximize development within this limited space, it is helpful to reduce the amount of parking and carefully manage the spaces available.[41]

Because of the close proximity of residents to stores and transit, it is more important to design TODs for biking and walking than for automobile travel. Paths through the development allow for a direct route to the center. While automobile traffic is not discouraged, it is slowed and dispersed throughout a network of streets, so that it does not discourage other modes of travel. Such a fine grid of narrow streets already exists in many areas of NPU-G. Future development should build on this strength.

While TODs are attractive to upper income households (TOD real estate tends to sell at higher prices), they do not have to be exclusionary to those of lower income. On the contrary, the concept of Location Efficient Development says that the savings in transportation costs achieved through TOD development principles can be used to make housing more affordable. The savings in TODs from building parking is one example. Higher densities reduce the amount of land a developer must invest in order to yield a certain return. A more straightforward illustration is that of Location Efficient Mortgages (LEMs), which consider transportation savings brought by a move to a TOD area as additional income a household has

[41] “Transit Oriented Development: Using Public Transit to Create More Accessible and Livable Neighborhoods.” TDM Encyclopedia. Victoria Transport Policy Institute. 4 June 2010. Retrieved from www.vtpi.org/tdm/tdm45.htm.

to pay off the mortgage. Spending this money on housing, instead of a vehicle, has historically been a better investment over time. Housing retains much of its value, more than gas that is consumed and cars are worn out.[42]

Examples of locations for TOD:

"Hightower Crossroads"

Where Hamilton E Holmes Drive / James Jackson Parkway and Hightower Road intersect Donald Lee Hollowell. It is served by three bus routes and is anchored by a non-chain, discount grocery and other retail. This was identified as a development node in the 2006 plan for the DL Hollowell – ML King TAD.

Transit Service: frequent – 6.2 busses per hour on weekday afternoons
Vision: Urban Mixed-Use Development
Recommendations:

- Consolidate parking into paid garages to free land for redevelopment
- Reduced requited building set-backs and increase allowable FARs to allow multi-story buildings along the street.

"7th Street"

Runs north from where Northwest Drive meets Hightower Road is in the Carey Park neighborhood, near the center of NPU-G. This tree-covered neighborhood of single-family homes and churches has a unique character. The location of interest lies near the confluence of three bus routes is home to one convenience store. The diagonal streets make this one of the most accessible points in Carey Park, suggesting it as the neighborhood center.

Transit Service: Frequent – Best in NPU-G - 7.2 busses per hour on weekday afternoons
Vision: Neighborhood center
Recommendations:

[42] "Location Efficient Development and Mortgages: Taking Advantage of Consumer and Transportation Benefits at Accessible Locations." TDM Encyclopedia. Victoria Transport Policy Institute. 4 June 2010. Retrieved from www.vtpi.org/tdm/tdm22.htm.

- Encourage home ownership & increase density by encouraging the construction of ancillary rental units.
- Invest public facilities such as libraries and community centers within this area.

"Hollywood Split"

Lies within the Grove Park neighborhood just outside of the NPU, where Hollywood Road splits off of Donald Lee Hollowell Parkway. This area has some retail and other businesses along the major streets. It is served by two bus routes.

Transit Service: Intermediate - 5 busses per hour
Vision: Neighborhood center
Recommendations:

- Consolidate parking into paid garages to free land for redevelopment
- Reduced requited building set-backs and increase allowable FARs to allow multi-story buildings along the street.

"HH TOD"

Hamilton E. Homes Station, at the intersection of Hamilton E. Holmes Drive and Martin Luther King Jr. Drive is currently surrounded by empty parking lots. While well outside the NPU, this is a major transportation hub for neighborhood residents who take transit. This site has the best transportation and transit accessibility in all of west Atlanta: Hamilton Holmes Station is located at the first I-20 exit inside the perimeter, and is a transfer center for a dozen bus routes. This makes it a prime location for a major retailer that could serve NPU-G and the rest of Atlanta's Westside. A 2002 LCI study explores opportunities for a transit-oriented development (TOD) on this site. However, the recommendations of the study are underwhelming and arguable under-ambitious. The LCI merely calls for high-density residential and small shops.

Transit Service: Frequent – Best on Westside – 12 routes running multiple times per hour
Vision: Commercial Center
Recommendations:

- Revise LCI plan to include more substantial retail
- Pursue opportunities for urban "big-box" retail.

"***Mason's Church"***

Refers to the civil-war-era church and cemetery at the intersection of Bolton Road and Donald Lee Hollowell Parkway. Only the cemetery remains today. This area now constitutes the short, busy stretch between the I-285 interchange and the Atlanta Industrial Park (AIP). As such, it functions as a gateway to the AIP and (going the other way on DL Hollowell) the neighborhoods of Atlanta. Long-term transit plans call for this spot to be a station transferring BRT on DLH and express bus on I-285.

Transit Service: Infrequent – 2 buses per hour – but long-term plans for more

Vision: Commercial Center

Recommendations:

- Develop plans for attractive "community entrance"

REDEVELOPMENT

NPU-G contains a large amount of land that is either undeveloped or underdeveloped. This land ranges from undisturbed, natural rolling hills, to vacant cleared sites, to tax-delinquent properties strewn with abandoned buildings, to hazardous waste sites. There is a great potential to redevelop much of this land into something that is revenue-producing for the neighborhood. In addition, these redevelopment opportunities can serve to meet the needs present in the neighborhood by creating jobs, providing places to locate basic services and everyday retail, giving the tax base a much needed increase, and creating a more vibrant community.

Our proposals for redevelopment focus primarily on the large parcels of land owned by the Atlanta Housing Authority. These sites were all formerly public housing projects, which were crime-ridden, not well maintained, and isolated from the rest of the neighborhood. All of the project sites have been torn down, and one has been rebuilt as the West Highlands community, located on the west edge of the NPU. For the rebuilding of other sites, we provide a set of recommendations that include a mix of uses in addition to a mix of housing types. There is a demonstrated need for more service and retail in the neighborhood, and these sites present opportunities to meet these needs, while increasing connectivity and growing in a smart way.

The majority of redevelopment opportunities are discussed in this section, however, other opportunities exist and are discussed in other major sections of this report.

AHA Redevelopment Overview

The Atlanta Housing Authority (AHA) owns several large tracts of land in NPU-G. These tracts are the sites of former public housing projects, all of which are now demolished. One of the sites has been redeveloped—West Highlands, on the site of former Perry Homes—but the remaining sites still sit empty. These large swaths of empty land effectively disconnect the neighborhood from itself and surrounding areas. In this section of the report, we present tailored development solutions for the future uses and redevelopment of the AHA properties in NPU-G.

The housing units were demolished in 2009-2010. When developed and occupied, each site had the necessary infrastructure to support residential and accessory uses. As noted above, the demolition of the housing on these sites has left a void that needs to be filled in this neighborhood. New development on the sites is subject to approval by the U.S. Department of Housing and Urban Development (HUD) and must contain a significant portion of low-income housing, or, provide for equivalent housing elsewhere on AHA properties. In addition to providing affordable housing to NPU-G's residents, the AHA sites had several valuable community amenities. A summary of the previous developments on these AHA properties is found in Table 1 below.

TABLE 1: AHA PROPERTIES INFORMATION

	Bankhead Courts	Hollywood Courts	Bowen Homes
Size or Property	42 Acres	20.2 Acres	83.9 Acres
Number of Units	386 Units	202 Units	650 Units
Amenities	Daycare Center, Off-street Parking, 24-hour Emergency Maintenance, Community Center, Playground, MARTA Stop	Daycare Center, Off-street Parking, 24-hour Emergency Maintenance, Community Center, Playground, Fitness Center, Basketball Courts, Laundry Facilities	Daycare Center, Off-street Parking, 24-hour Emergency Maintenance, Community Center, Playground, West End Medical Center, Library
Density	9.2 Units/Acre	10 Units/Acre	7.7 Units/Acre

Source: Atlanta Housing Authority

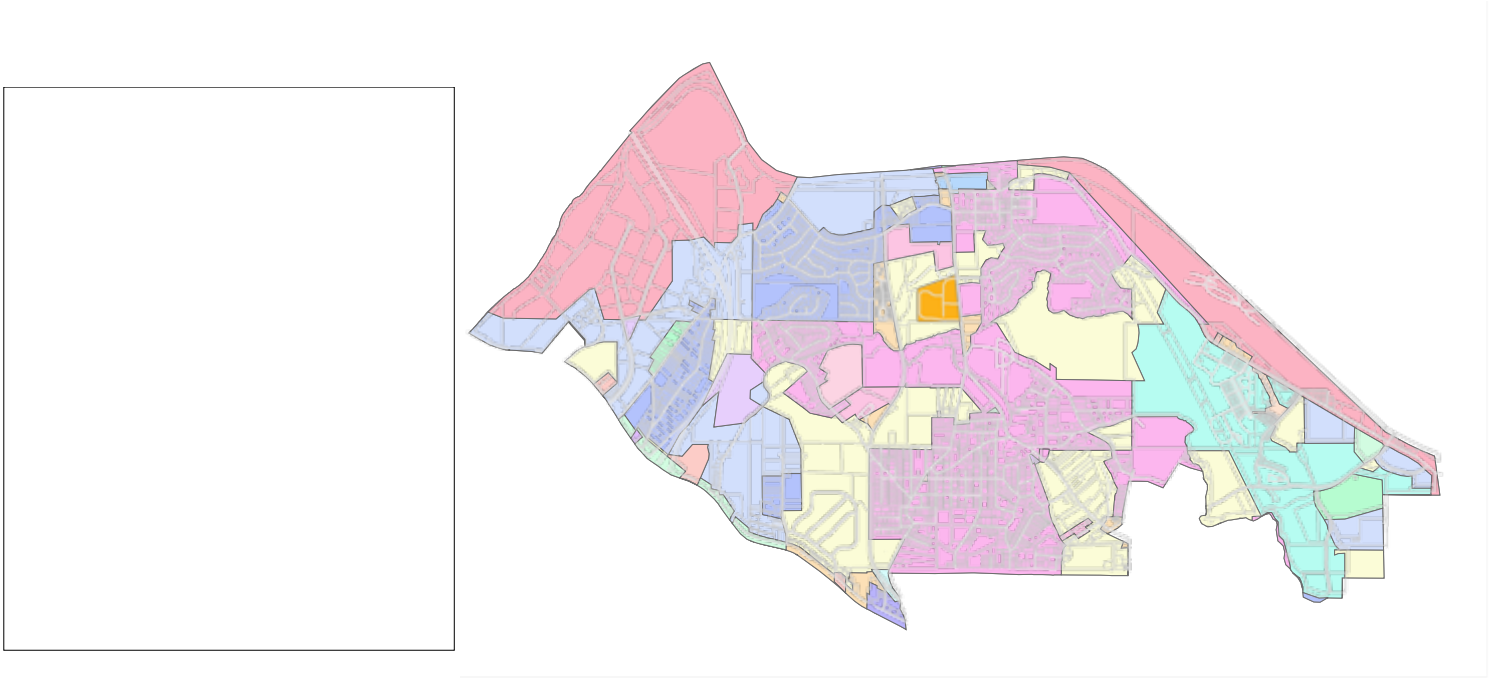
Based on the number of units by bedroom provided in the AHA's report for Bankhead Courts, Hollywood Courts, and Bowen Homes, the properties had approximately 1238, 496, and 1620 residents respectively. The State of Georgia does not regulate the number of persons who can reside in one bedroom so these numbers may be conservative estimates. Another important characteristic to consider is that the densities for these housing communities are in the range of "Single-family homes, estate lots" which range from 4-10 dwelling units per acre based on the Livable Communities Coalition's Smart Growth guidelines.

The tailored solutions for the three AHA former public housing properties have taken into account location, density, and community needs and attempt to encourage smart growth principles and sustainability while combating the social and economic shortcomings of NPU-G.

Area Land Use Analysis

NPU-G lacks a well-dispersed amount of commercial space throughout the community. Most of the commercial space that serves the community is located along Donald Lee Hollowell Parkway. Hollywood Courts is no exception to this pattern, with the site zoned as RG-3 residential similar to most of the surrounding land uses. As can be seen in Map 3 below, NPU-G is primarily zoned residential (R-4, R-4A, and R-G3) and industrial (I-1 and I-2). Commercial zoning that allows for light commercial and retail spaces (C-1 and C-2) is sparsely located along the Donald Lee Hollowell Parkway corridor.

Map 3: Current Zoning Map



Source: City of Atlanta GIS Database

The lack of integrated uses is evident in this segregation of uses runs counter to the federal government's renewed focus on "Livability Principles," designed to create neighborhoods that are healthy, safe and walkable. These principles are outlined by a renewed effort for coordinated investment between the Department of Transportation, Department of Housing and Urban Development, and the Environmental Protection Agency. The list of these principles developed by the multi-agency Partnership for Sustainable Communities is provided below:

1. Provide more transportation choices. Develop safe, reliable and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health.

2. Promote equitable, affordable housing. Expand location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation.

3. Enhance economic competitiveness. Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers as well as expanded business access to markets.

4. Support existing communities. Target federal funding toward existing communities – through such strategies as transit-oriented, mixed-use development and land recycling – to increase community revitalization, improve the efficiency of public works investments, and safeguard rural landscapes.

5. Coordinate policies and leverage investment. Align federal policies and funding to remove barriers to collaboration, leverage funding and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.

6. Value communities and neighborhoods. Enhance the unique characteristics of all communities by investing in healthy, safe and walkable neighborhoods – rural, urban or suburban.

Source: Initiative for Sustainable Communities and States

RETAIL SUPPLY AND DEMAND

NPU-G lacks a dispersed network of commercial space that residents can easily access through modes of transportation other than automobiles. Thus, the strategic location of Hollywood Courts appears to provide an opportunity for a more central location for residents of the community to shop, work, eat and be entertained. However, in order to fully evaluate the site's market potential for demand, we analyzed the unmet sales potential in the surrounding area, also known as the "Retail Gap". We obtained a report from a third party data source, ESRI, to analyze the unmet demand within a 0.5-mile radius of the Hollywood Courts site.[43] As we can see from Figure 21, it appears as though the only industry category that is over-supplied within this area is beer, wine and liquor stores, illustrating a significant opportunity for new commercial development mixed within the affordable housing that AHA is required to complete per the site restrictions.

[43] ESRI Retail Gap methodology: Supply (retail sales) estimates sales to consumers by establishments. Sales to businesses are excluded. Demand (retail potential) estimates the expected amount spent by consumers at retail establishments. Supply and demand estimates are in current dollars. The Retail Gap represents the difference between Retail Potential and Retail Sales. A positive Retail Gap represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales; a market where customers are drawn in from outside the trade area. ESRI uses the North American Industry Classification System (NAICS) to classify businesses by their primary type of economic activity.

FIGURE 21: RETAIL SUPPLY AND DEMAND WITHIN 0.5-MILE RADIUS OF HOLLYWOOD COURTS

Industry Group	Demand (Retail Potential)	Supply (Retail Sales)	Retail Gap
Motor Vehicle & Parts Dealers (NAICS 441)	$2,504,993	$0	$2,504,993
Automobile Dealers (NAICS 4411)	$2,272,662	$0	$2,272,662
Other Motor Vehicle Dealers (NAICS 4412)	$105,430	$0	$105,430
Auto Parts, Accessories, and Tire Stores (NAICS 4413)	$126,901	$0	$126,901
Furniture & Home Furnishings Stores (NAICS 442)	$304,594	$0	$304,594
Furniture Stores (NAICS 4421)	$194,446	$0	$194,446
Home Furnishings Stores (NAICS 4422)	$110,148	$0	$110,148
Electronics & Appliance Stores (NAICS 443/NAICS 4431)	$397,678	$0	$397,678
Bldg Materials, Garden Equip. & Supply Stores (NAICS 444)	$343,131	$0	$343,131
Building Material and Supplies Dealers (NAICS 4441)	$331,380	$0	$331,380
Lawn and Garden Equipment and Supplies Stores (NAICS 4442)	$11,751	$0	$11,751
Food & Beverage Stores (NAICS 445)	$2,015,657	$546,363	$1,469,294
Grocery Stores (NAICS 4451)	$1,865,010	$17,634	$1,847,376
Specialty Food Stores (NAICS 4452)	$22,758	$0	$22,758
Beer, Wine, and Liquor Stores (NAICS 4453)	$127,889	$528,729	$-400,840
Health & Personal Care Stores (NAICS 446/NAICS 4461)	$354,554	$0	$354,554
Gasoline Stations (NAICS 447/4471)	$1,864,047	$332,500	$1,531,547
Clothing and Clothing Accessories Stores (NAICS 448)	$616,614	$19,746	$596,868
Clothing Stores (NAICS 4481)	$490,134	$19,746	$470,388
Shoe Stores (NAICS 4482)	$66,233	$0	$66,233
Jewelry, Luggage, and Leather Goods Stores (NAICS 4483)	$60,247	$0	$60,247
Sporting Goods, Hobby, Book, and Music Stores (NAICS 451)	$130,789	$0	$130,789
Sporting Goods/Hobby/Musical Instrument Stores (NAICS 4511)	$86,388	$0	$86,388
Book, Periodical, and Music Stores (NAICS 4512)	$44,401	$0	$44,401

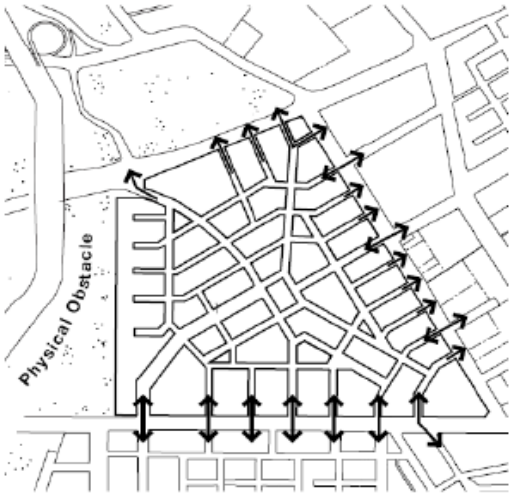
Industry Group	Demand (Retail Potential)	Supply (Retail Sales)	Retail Gap
General Merchandise Stores (NAICS 452)	$1,500,592	$68,122	$1,432,470
Department Stores Excluding Leased Depts.(NAICS 4521)	$435,282	$0	$435,282
Other General Merchandise Stores (NAICS 4529)	$1,065,310	$68,122	$997,188
Miscellaneous Store Retailers (NAICS 453)	$158,762	$0	$158,762
Florists (NAICS 4531)	$16,380	$0	$16,380
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	$50,292	$0	$50,292
Used Merchandise Stores (NAICS 4533)	$8,657	$0	$8,657
Other Miscellaneous Store Retailers (NAICS 4539)	$83,433	$0	$83,433
Nonstore Retailers (NAICS 454)	$593,138	$0	$593,138
Electronic Shopping and Mail-Order Houses (NAICS 4541)	$426,724	$0	$426,724
Vending Machine Operators (NAICS 4542)	$16,845	$0	$16,845
Direct Selling Establishments (NAICS 4543)	$149,569	$0	$149,569
Food Services & Drinking Places (NAICS 722)	$2,052,725	$0	$2,052,725
Full-Service Restaurants (NAICS 7221)	$832,059	$0	$832,059
Limited-Service Eating Places (NAICS 7222)	$903,247	$0	$903,247
Special Food Services (NAICS 7223)	$188,361	$0	$188,361
Drinking Places - Alcoholic Beverages (NAICS 7224)	$129,058	$0	$129,058

Source: ESRI

INTERNAL AND EXTERNAL CONNECTIVITY

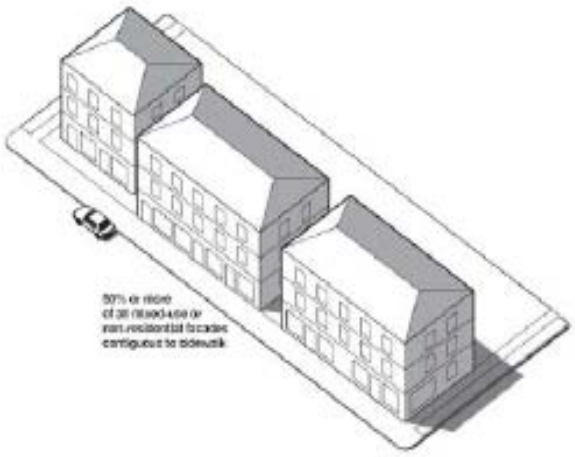
Large urban infill developments are often challenged by the task of connecting to the fabric of the existing community. If not done properly, these developments can become silos isolated from their neighbors and create inefficient driving accessibility for the new residents. Ideally, new developments would create a street pattern that provides maximum connectivity to the adjacent street network, as illustrated below in Figure 23.

FIGURE 23: URBAN INFILL CONNECTIVITY



Source: USBGC

FIGURE 22: DEVELOPMENT SETBACKS



PROGRAMS, FUNDING, AND EVALUATION CRITERIA

An important factor to consider is the role of HUD in the development of any AHA properties, as any developments on these lands are subject to its approval. Additionally, a Declaration of Trust (DOT) is always implemented when a project is established between a Public Housing Authority and HUD. The DOT simply provides that the AHA is holding and operating the developments on these sites to serve the interests of HUD. There have been numerous progressive initiatives issued by HUD, many of which include the design and smart growth principles mentioned above, to improve the image and quality of public housing nationwide. These programs include, but are not limited to, Hope VI, Moving to Work, and Choice Neighborhoods.

Hope VI is targeted at severely distressed public housing and aims to improve or redevelop public housing projects to better serve the resident's needs; in NPU-G, Hope VI funds were used to demolish all four of the AHA projects. Citywide, Hope VI funds have been used to redevelop or improve public housing. Choice Neighborhoods has not been formally established as a HUD program, but currently has projects funded under the Hope VI umbrella. HUD and Congress are working on drafting formal legislation for the program for use in fiscal year 2011. The Moving to Work program is another funding initiative is offered by HUD and is designed to give local housing authorities more flexibility when spending federal funds. The flexibility is intended to increase efficiency by allowing housing authorities to more effectively help residents find employment and become self-sufficient. The funds for this program are awarded in a similar fashion as that of Hope VI.

New public housing design and location criteria are placing a strong emphasis on Leadership in Energy and Environmental Design for Neighborhood Development (LEEN-ND) standards. This is a program that incorporates LEED-ND design principles that include provisions for connectivity, efficiency, smart growth, and a more integrated transportation and access system. HUD will be scoring grant proposals using the LEED-ND location-efficiency criteria specifically, taking into account other design mechanisms as an attempt to reduce sprawl and promote sustainability and infill development. The Choice Neighborhoods program is attempting to combine the design principles of new urbanism with an increased awareness of the importance of transportation accessibility in low-income communities. Ultimately, Choice Neighborhood has been proposed as an updated and supplementary program to Hope VI that will take

failed public housing policies beyond their current positions and provide greater transformations. There are currently no grant applications open for the programs mentioned in this report; however, they are generally available on yearly basis.

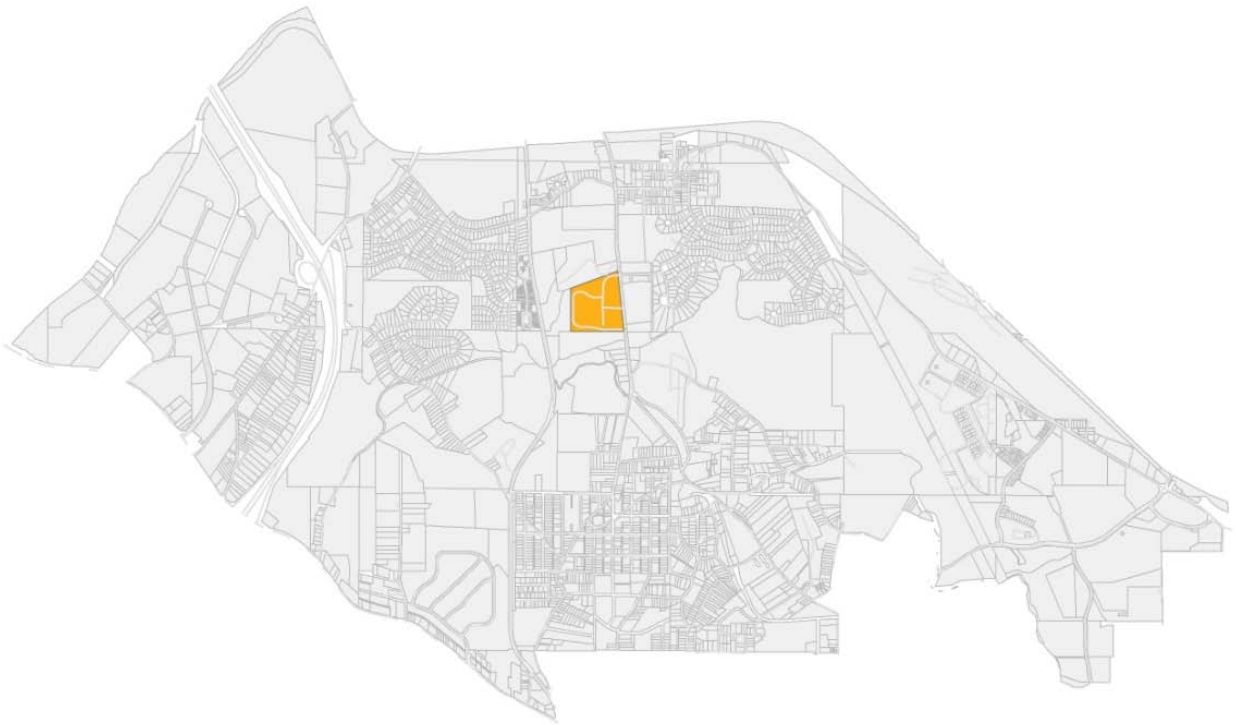
In the following sections, we present tailored solutions for NPU-G's vacant AHA properties. The solutions were created under the premise that these sites are all candidates for Choice Neighborhood funding and can easily incorporate LEED-ND designs. While their locations lend themselves to a different set of uses, all three have an abundance of possibility and can be developed in a way that provides benefits to their immediate communities as well as to the City of Atlanta. Most importantly, our main objectives are connecting these sites to their surrounding communities; promoting walkability and interactions through increased density; filling the many voids that a lack of affordable housing and access to employment have left; and maintaining and preserving the core values of NPU-G. We feel that each redevelopment plan serves these goals.

HOLLYWOOD COURTS SITE ANALYSIS

OVERVIEW

Hollywood Courts is a vacant Atlanta Housing Authority site that formerly consisted of 25 buildings with 202 affordable housing units. The housing project was built in 1969, demolished in 2008, and is currently awaiting redevelopment. Of the three AHA vacant sites within NPU-G, the Hollywood Courts site is the smallest at 20 acres. It is less than half the size of the 42 acre Bankhead Courts and less than a quarter of the size of Bowen Homes' 84 acres. However, as can be seen from Map 4 below, the site is also the most centrally located within the NPU, representing a strategic opportunity to serve the community and provide development uses that do not currently exist within the surrounding area.

MAP 4: LOCATION OF HOLLYWOOD COURTS WITHIN NPU-G



Source: City of Atlanta GIS Database

DEVELOPMENT FORM, USE AND CHARACTER

In order to integrate a significant amount of commercial space within the redevelopment of Hollywood Courts while, at the same time, recreating a substantial amount of mixed-income housing in line with the mission of the AHA, a medium density mixed-used development is recommended. As seen in Figure 24, this development type typically includes compact three- to four-story buildings with commercial space on the ground floor and residential units stacked on top.

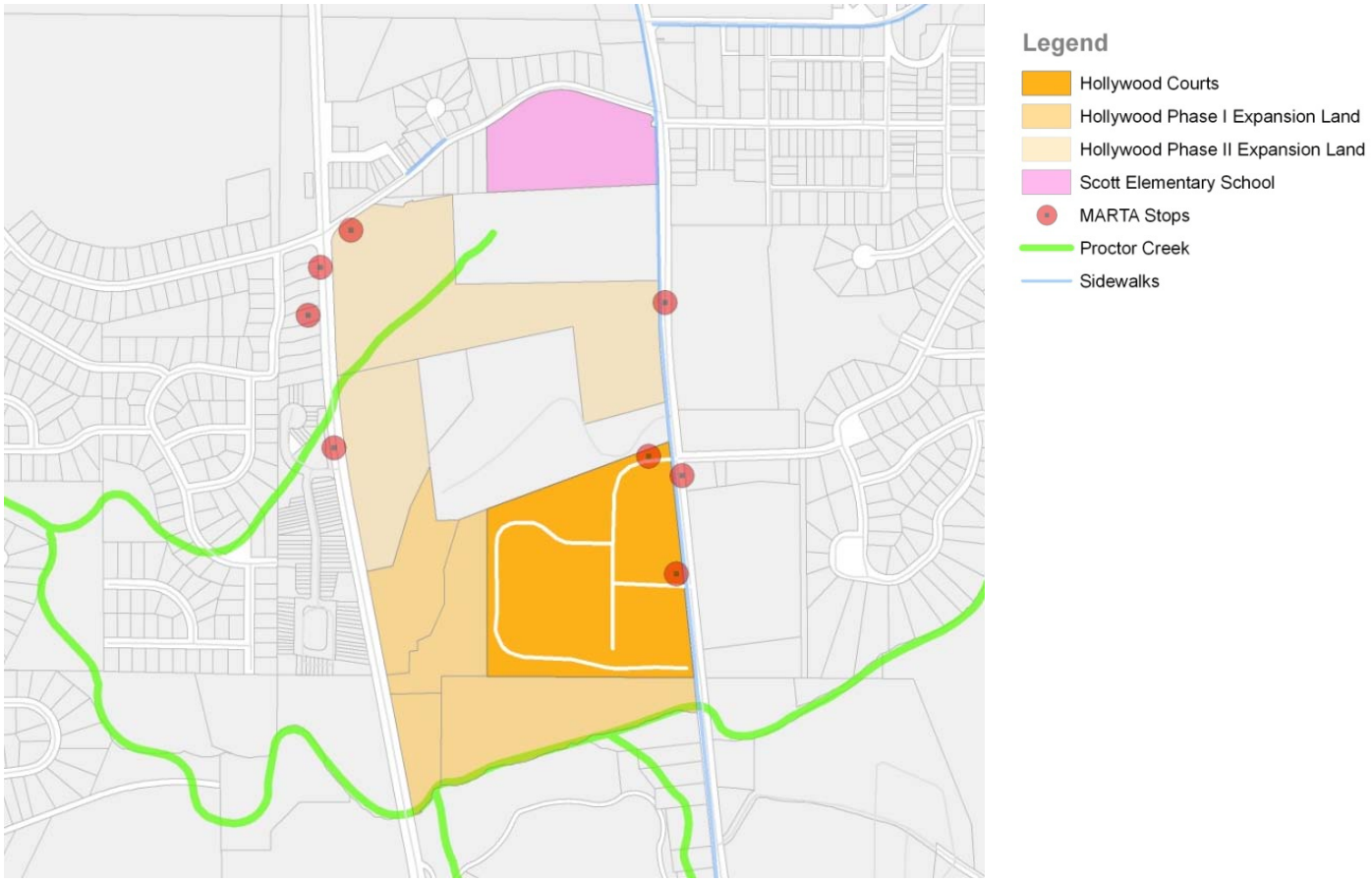
FIGURE 24: MIXED-USE DEVELOPMENT EXAMPLES

Clockwise from top left: Glenwood Park, Ivy Walk, Glenwood Park; Atlanta, Georgia.

Sources: Green Street Properties, Georgia Chapter of the Sierra Club, The Seaside Institute

Given that the Hollywood Courts site is relatively compact compared to the other AHA sites within NPU-G, land acquisition from surrounding property owners is worth exploring. The parcels identified below in Figure 25 as “Phase I Expansion Land” and “Phase II Expansion Land” are owned by a combination of private individuals, the Atlanta Greenspace Initiative, and the Atlanta Board of Education. Expansion would also allow for connections to James Jackson Parkway to the rear of the site and access to Proctor Creek, as outlined in the Connections section.

FIGURE 25: HOLLYWOOD COURTS EXPANSION ANALYSIS



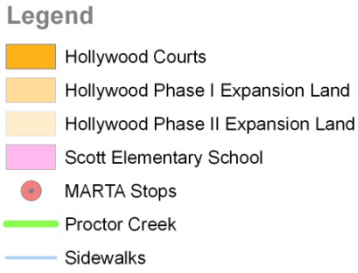
Source: City of Atlanta GIS Database

Site Connectivity

The existing street network within the Hollywood Courts site is essentially one very large cul-de-sac isolated from the surrounding community. This street layout also creates very large blocks that discourage walking and provide fewer chances for social interaction that can help prevent crime. Within the existing site, additional street connections are recommended in order to provide smaller blocks. In addition, minimum setbacks are recommended to allow for more “eyes on the streets” within the community.

Figure 26 shows how the street network could be further expanded to connect to James Jackson Parkway if additional land is assembled. Furthermore, the southernmost parcel of adjacent land represents a strategic opportunity to connect to Proctor Creek and the potential greenway that could be located there.

FIGURE 26: EXISTING AND PROPOSED STREET CONNECTIVITY



Source: Author's creation on City of Atlanta GIS Database

BOWEN HOMES SITE ANALYSIS

OVERVIEW

Bowen Homes is a vacant Atlanta Housing Authority site that formerly consisted of 101 buildings with 650 affordable housing units. The housing project was built in 1964, demolished in 2009, and is currently awaiting redevelopment. Of the three AHA vacant sites within NPU-G, the Bowen Homes site is the largest, sitting on over 83 acres. Based on the size and number of bedrooms, Bowen Homes could have easily housed over 1,600 residents. As shown in Figure 27, the Bowen Homes site is located parallel to Donald Lee Hollowell on the southern boundary of the NPU. The location of the property and its size lend themselves to many development opportunities that will be beneficial to the surrounding neighborhoods. In particular, our recommendations focus on increasing opportunities for residents to gain employment, access to retail, and be better connected with the surrounding neighborhoods.

DEVELOPMENT FORM, USE AND CHARACTER

Focusing on street connectivity, walkable blocks, access to MARTA, and paying close attention to the location and needs of the community, the best redevelopment strategy for the Bowen Homes site is mixed use development. The character of the site will include an increase in density, connectivity, and access to everyday retail and neighborhood stores. Ideally, the development of this property would be in accordance with the City's MRC-1 zoning classification: per City of Atlanta Zoning Ordinances, MRC-1 is

low density residential and commercial uses intended to serve a single neighborhood or small group of adjacent neighborhoods.[44]

As mentioned above, the parcel is not located directly on D.L. Hollowell Parkway and is large enough to support residential, civic, open space, and retail uses. There are several density bonuses available to developers based on what percentage of the space is based on what use, all of which are ideal for this community. The density bonus would allow the developer to provide more units per acre than originally specified to compensate their providing below-market rate units. The northern portion of the property that is adjacent to the park and school is a prime location for a community garden or recreational field, which meets the civic space requirement for the density bonuses. The retail definition for this site is also appropriate in that it is limited to uses that will serve a neighborhood or adjacent neighborhoods. This location is somewhat isolated and would operate best as a community retail location versus a destination retail location. Additionally, the zoning code specifies that at least 20% of units must be affordable in order to increase density. This site is ideal for this type of development; a partnership between the AHA and a local non-profit developer could incorporate a mixed-income development with public housing and a mixed-income community, providing an opportunity for different demographic groups to live and work together. The proposed uses compliment the objectives that have been established by HUD.

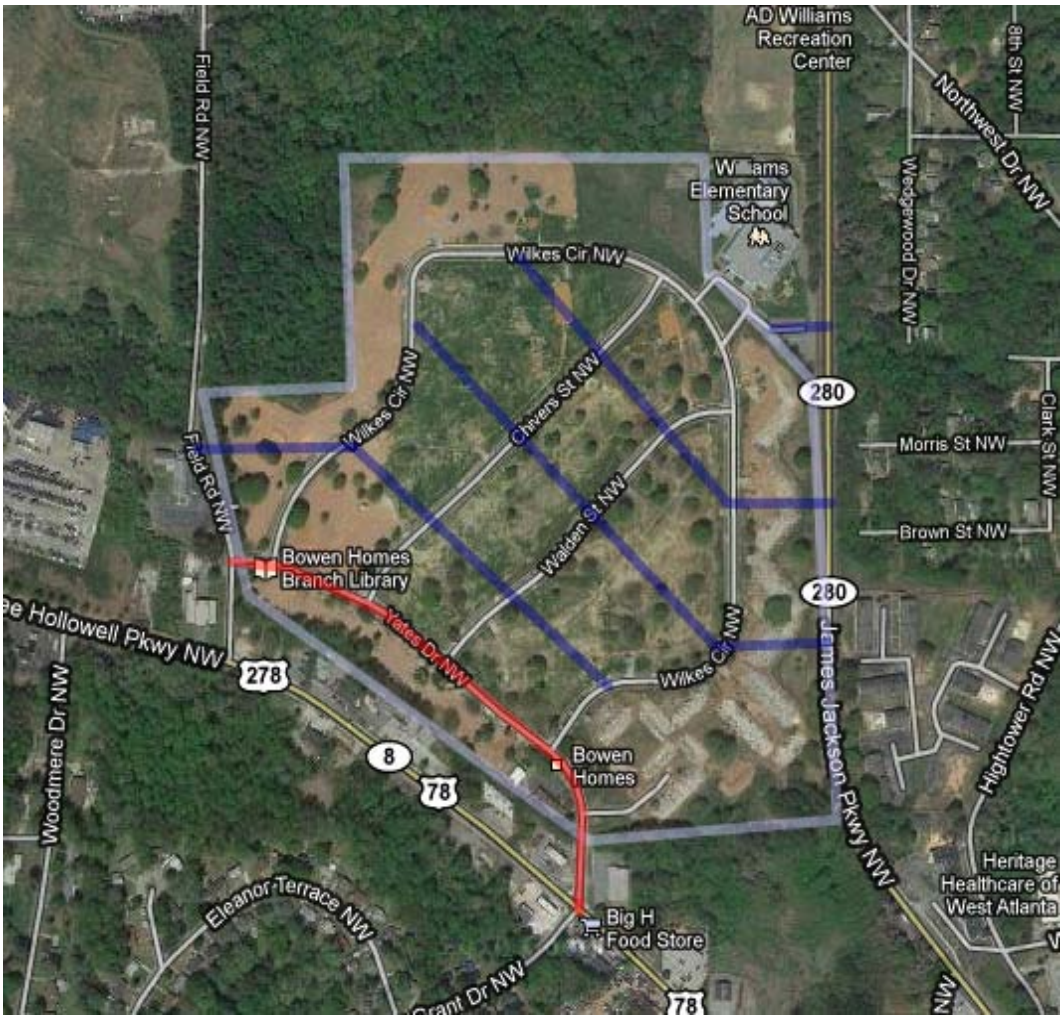
Site Connectivity

As was mentioned in the design standards and in the recommendations for the Hollywood Courts site, a key objective is to increase connectivity for residents and neighbors; the addition of infrastructure and connectivity will eliminate development patterns that have been detrimental to community development and retail access seen in the past. As is true of the other sites, the existing street network for the Bowen Homes site consisted of two access points and a large cul-de-sac. This type of street network can be detrimental to the success and livelihood of a community. Being cut off from neighboring developments and interacting only within a secluded, concentrated area has been shown to breed crime and limit the social development of the residents.[45] The addition of cross-streets and points of ingress, as seen in Figure 27, will reduce the sizes of the blocks, allow for better access to the redevelopment that will occur here, and facilitate more interaction between the residents of Bowen Homes and their interactions with

[44] City of Atlanta Zoning Ordinance, 2010
[45] http://www.accessmylibrary.com/article-1G1-20834788/exploring-effects-public-housing.html

the surrounding communities. This minor change in the street network would allow for a more central and dense development scheme, leaving vacant land around the northern perimeter for other uses, such as the community garden proposed later in this report.

FIGURE 27: BOWEN HOMES PROPOSED STREET CONNECTIVITY



Source: Author's creation on Google image

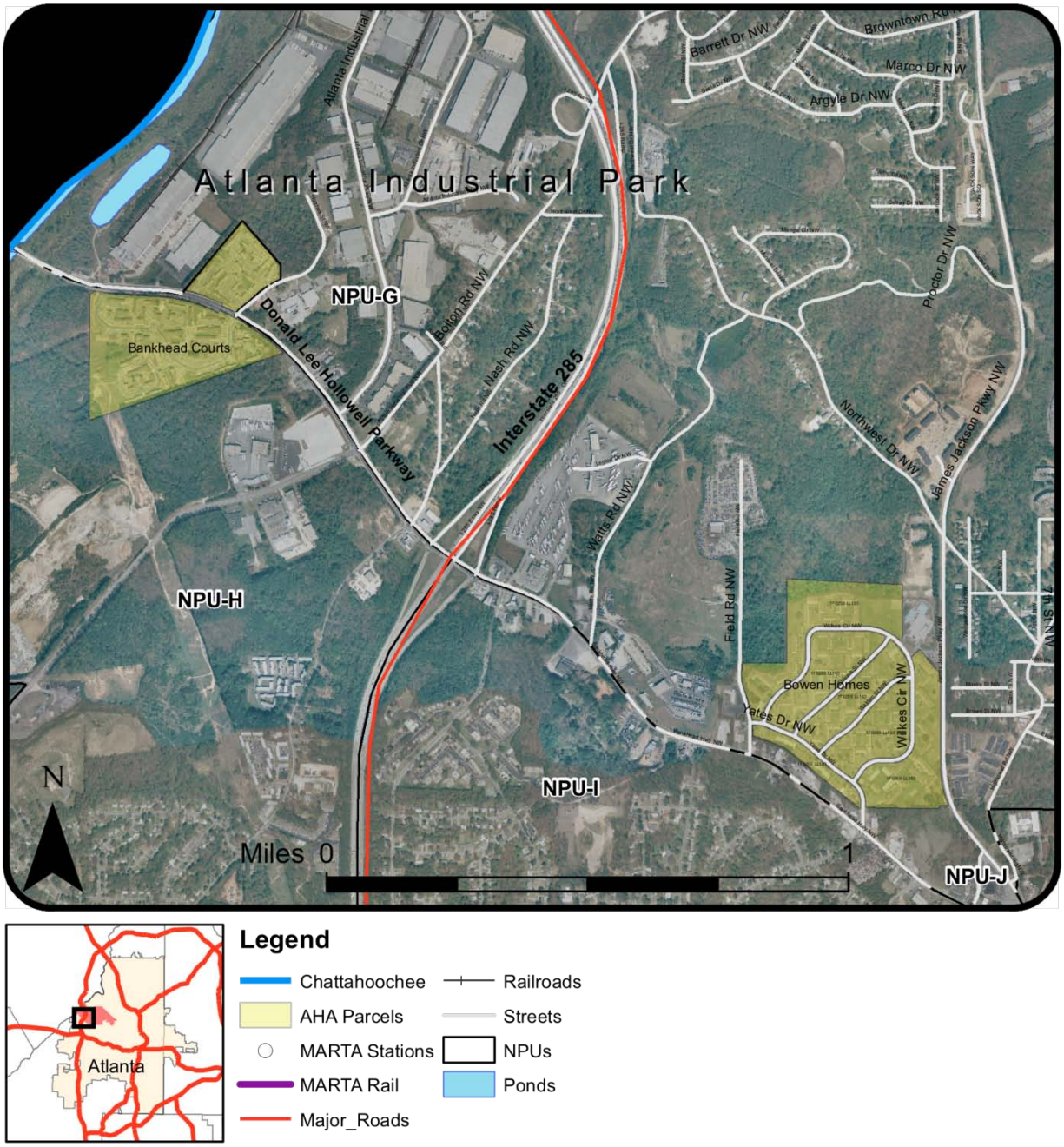
BANKHEAD COURTS SITE ANALYSIS

OVERVIEW

Bankhead Courts is a vacant Atlanta Housing Authority site that formerly consisted of 57 buildings with 386 affordable housing units. The housing project was built in 1970, demolished in 2009, and is also currently awaiting redevelopment. Of the three AHA vacant sites within NPU-G, the Bankhead Courts falls between Bowen Homes and Hollywood Courts in size, sitting on 42 acres. Bankhead Courts is located on an isolated parcel of land on the west portion NPU-G. The parcel, owned by the Atlanta Housing Authority, is divided into two parts by D.L. Hollowell Parkway, as shown in Map 5, below.

The section north of D.L. Hollowell Parkway is bounded in by the Atlanta Industrial Park to its north, the warehouse distribution facility to its west, and Blalock Elementary to its east. The south section of the parcel is boarded by D.L. Hollowell Parkway to the north, the Chattahoochee River to the west, and vegetative buffers to the south and east. A key redevelopment issue for Bankhead Courts is that the development is surrounded by industrial land, and, the development is segregated from the rest of the neighborhood. Despite these challenges, the redevelopment of Bankhead Courts provides the neighborhood with an opportunity to connect residents to job producing land near the Bankhead Courts site, thereby increasing their ability to achieve upward mobility.

MAP 5: LOCATION OF BANKHEAD COURTS



Source: City of Atlanta GIS Department

DEVELOPMENT FORM, USE AND CHARACTER

Since Bankhead Court's surrounding land-use is industrial, the proposed plan for the redevelopment of the site is to build a mixed-use development that combines residential and industrial land uses. Due to the ordinary operations of the businesses, industrial uses produce various types of nuisances. These nuisances must be mitigated in order to keep residents happy as well as to keep industrial business profitable in mixed industrial/residential land uses. To mitigate the nuisances that might arise from mixing industrial and residential land, the Atlanta Housing Authority should allow the Atlanta Industrial Park to expand its borders to include the Bankhead Courts site north of D.L. Hollowell Parkway. D.L. Hollowell Parkway will act as a buffer between the industrial use, north Bankhead Courts, and the residential use, south Bankhead Courts. The buffer will reduce the noise and air pollution that might arise from any new business that locates within the Atlanta Industrial Park's added space.

The south section of Bankhead Courts should be built in accordance with the best practices established by LEED Neighborhood Development guidelines. The site should contain dense, mixed income residential development. A retail and commercial strip should line the north edge of this portion, along D.L. Hollowell Parkway. In this retail strip will be the Nature Center, which will be tied to the entrance to the river trail just across the street. Streetscape improvements could be made which would include street parking, sidewalks, street trees, a mid-block pedestrian crossing from the Bankhead Courts site to the river trail, and beautification of the areas abutting the river. These streetscape improvements will both beautify the area and make the corridor safer for pedestrians. Also, the dense residential development will allow the AHA to achieve their housing goals and concede land to the Atlanta Industrial Park. Furthermore, the Atlanta Housing Authority should use an innovative supportive housing model which links residents in the public housing development with job opportunities in the Atlanta Industrial Park. A supportive housing model that focuses on basic interview skills and job training will be used to give residents the necessary skills to obtain and maintain employment.

The Green Industry Training Program workforce development program (described in the next section of this report) can provide job training to Bankhead Courts residents. GITP could also better connect Bankhead Courts residents to businesses located in the newly expanded AIP. To insure that this happens, the AHA could seek a community benefits agreement from any newly located AIP business as well as from current Atlanta Industrial Park employers. Moreover, to maximize the training that GITP

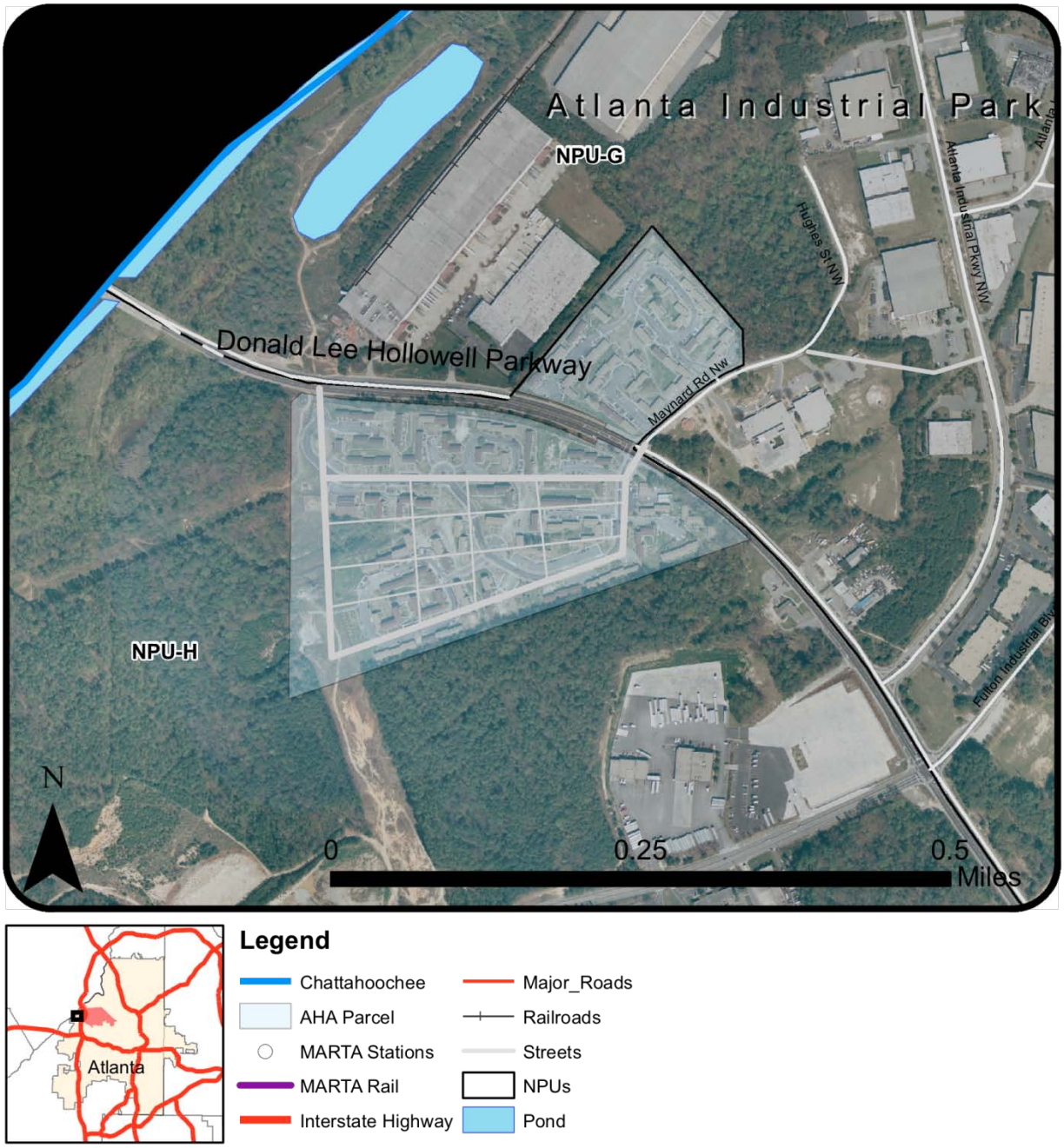
provides, the AHA should work with the Atlanta Development Authority to attract a waste to profit or similar green manufacturer in the area.[46] By providing job training to residents within the Bankhead Courts redevelopment, AHA can help residents achieve upward mobility while providing affordable housing to lower-income residents.

Site Connectivity

The current Bankhead Courts street network provides little connectivity within the Bankhead Courts site. Also, the current street network does not offer easy access to the Atlanta Industrial Park. Map 6 shows the proposed grid network (in gray) that will improve connectivity within the Bankhead Courts site. The grid network will also increase the walkability of the neighborhood, which will encourage residents to walk to the various destinations within and close to the redevelopment. One important proposed connection is to build a road that connects Hughes Street NW to Atlanta Industrial Parkway NW. This will both improve the worker's ability to walk to the AIP and give AIP businesses another route to D.L. Hollowell Parkway. Finally, the Bankhead Courts redevelopment will have to provide residents with access to other parts of the neighborhood, especially for residents who may not have access to private transportation. Bus stops located near the site and/or a private shuttle run by the Bankhead Courts development are viable options to increase the residents' ability to get to other parts of the neighborhood.

[46] A waste to profit business is any company that uses waste products and recycles them to make a finished good that can be sold in the market. An example would be a firm that recycles old carpet into drywall panels.

MAP 6: PROPOSED CONNECTIONS THROUGH BANKHEAD COURTS



Source: City of Atlanta GIS Department

FUNDING AND DEVELOPMENT

The Bankhead redevelopment project can utilize several funding streams to pay for the project. Since the parcel lies within the Hollowell/MLK tax allocation district, the infrastructure enhancements to the area can be paid for by the TAD's bond revenue. To pay for the supportive workforce development housing, the Atlanta Development Authority can apply for the Moving to Work pilot program sponsored by the United States Department of Housing and Urban Development (HUD). Moving to work is "a demonstration program for public housing authorities that provides them the opportunity to design and test innovative, locally-designed strategies that use Federal dollars more efficiently, help residents find employment and become self-sufficient, and increase housing choices for low-income families."[47] The Bankhead Courts redevelopment fulfills the exact goals of HUD's Moving to Work Program. Bankhead Courts creates employment opportunities for its residents and enables them to reach self-sufficiency.

[47] United States Department Of Housing and Urban Development. (2010). Moving to Work. Retrieved November 24, 2010, from http://www.hud.gov/offices/pih/programs/ph/mtw/

OPPORTUNITIES FOR ADVANCEMENT

In our research, we have found that compared to other areas within the city of Atlanta, residents within NPU-G are generally underserved in employment opportunities commensurate with their skills and education. This, in turn, minimizes their opportunities for social mobility. Even with the presence of employers in areas such as the Atlanta Industrial Park, this skills gap has led to most skilled jobs in the neighborhood largely being held by people that live outside NPU-G, while local residents have to leave the area to seek meaningful employment. Concurrently, due to lack of new residential construction and the demolition of four major housing projects, the resulting shifts of the local residential population have led to the closure of more than half of the NPU's public educational facilities over the past two decades. This has led to the loss of not only the neighborhood's only high school, but also vital centers for learning and community that would serve local schoolchildren.

Therefore, to help close this skills gap as well as take advantage of the recent rise in the green economy, we propose the implementation of training programs that increase employment opportunities for residents within NPU-G. These programs will be designed to encourage employer involvement as well as include practices that promote sustainability measures noted in the City of Atlanta's 2010 Sustainability Plan. Finally, we also propose adaptive reuse for the three closed public schools located in NPU-G, with an emphasis on integrating the sites with adjacent redevelopment plans listed in this report.

WORKFORCE DEVELOPMENT

There is a gap between the skills of the residents and the job opportunities within the neighborhood.[48] Large neighborhood employment sectors include manufacturing, construction, and wholesale trade, but the residents of the neighborhood tend to work in the Retail Trade, Health Care and Social Assistance, and Accommodation and Food Services sectors. This contributes to the mismatch between employer and employee needs. If neighborhood residents wish to capitalize on the employment opportunities within their neighborhood then they will have to undergo job training to develop the skills that neighborhood employers are looking for in a potential employee. The skill gap between the residents and neighborhood employers presents a unique opportunity to develop a workforce development program within the neighborhood and the city limits of Atlanta. This program can help to not only improve the employment outcome for local residents, but also help the City of Atlanta fulfill its stated goals from the 2010 Sustainability Plan described below.

CITY OF ATLANTA 2010 SUSTAINABILITY PLAN

The 2010 Sustainability Plan seeks "to ensure that the City of Atlanta becomes one of the top ten sustainable cities in the US."[49] In order to achieve this stated goal, the City of Atlanta has identified two specific strategies that are important to the neighborhood's workforce development plan:

1) Grow sustainability education and training program in key action areas for municipal employees and community.
2) Work with community to catalyze new projects and policy initiatives.[50]

[48] Allen, C., Caiafa, T., Clark, J., Gitt, S., Liwag, K., McClendon, E., et al. (2010). *Blueprints: NPU-G Community Master Plan: A Live-Work-Play Approach to Upward Mobility: Background Analysis Report*. Atlanta: Georgia Institute of Technology.

[49] Mahoney, M., Bennett, D., & Grushack, S. (2010). *City of Atlanta Sustainability Plan*. City of Atlanta: Mayor's Office of Sustainability. (page 2)

[50] Mahoney, M., Bennett, D., & Grushack, S. (2010). *City of Atlanta Sustainability Plan*. City of Atlanta: Mayor's Office of Sustainability. (page 16)

1. The city plans to launch a green workforce development policy and program to achieve the first strategy.[51] The green workforce development program seeks to improve the city's foothold on the green economy. By attracting this new program into NPU-G, neighborhood residents can retool their skill set to qualify for higher paying jobs, the city can benefit by increasing the development of green businesses, and local employers benefit by having a better skilled workforce that can help them achieve their company's sustainability goals.

GREEN JOBS

The United States Bureau of Labor Statistics (BLS) uses a two-part definition to identify green jobs. Green jobs must either be "jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources" or "jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources."[52] The fact that the BLS is using a dual definition points to the fact that what society describes as a green job is difficult to define. Despite the difficulty in defining what a green job is and isn't, there is a growing focus on attracting, developing, and maintaining green jobs within America's economy. While the BLS is currently surveying employers to determine the number of green jobs within the national economy, a few states have completed surveys that estimate their green workforce.

A report issued by the Oregon Employment Department Workforce and Economic Research Division (OED) found that the Oregon had an estimated 51,402 green jobs in 2008.[53] This amounts to 3 percent of Oregon's total private, state government, and local government employment. The average wage for a green job in Oregon was $22.61 per hour while the average wage for all jobs in Oregon during 2008 was $19.92.[54] The study also found that 32 percent of Oregon's green jobs had no educational requirements

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[51] Mahoney, M., Bennett, D., & Grushack, S. (2010). *City of Atlanta Sustainability Plan*. City of Atlanta: Mayor's Office of Sustainability. (Page 20)

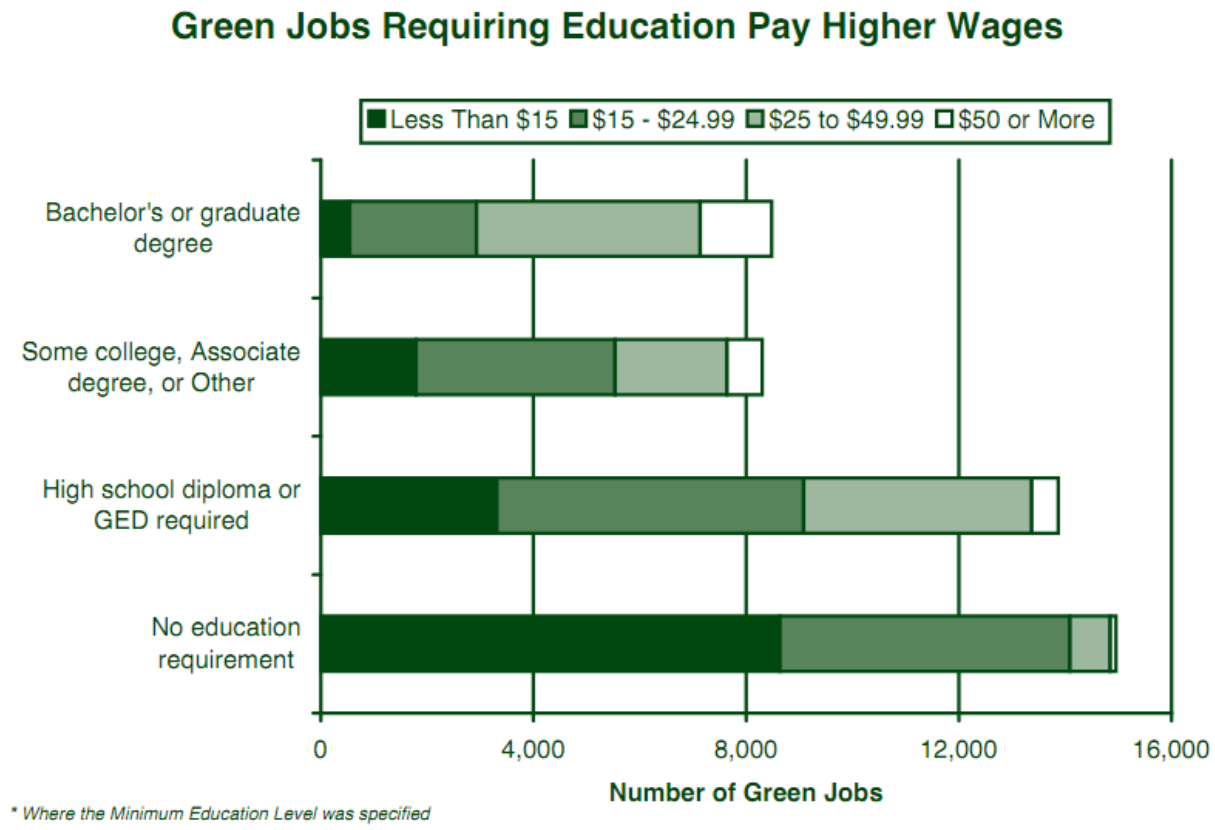
[52] United States Bureau of Labor Statistics. (2010). Measuring Green Jobs. Retrieved November 24, 2010, from http://www.bls.gov/green/

[53] Oregon Employment Department Workforce and Economic Research Division. (2009). *The Greening of Oregon's Workforce: Jobs, Wages and Training*. Salem, OR

[54] ibid

for the position, 64 percent of Oregon's green jobs require a high school education or below.[55] While the study found that green jobs don't necessarily need employees to possess high levels of educational attainment, it also found that those with higher education received higher wages, as demonstrated in Figure 28.

FIGURE 28: GREEN JOB EDUCATION AND EARNINGS



Source: OED 2009

Michigan is another state that has also completed an analysis of its green employment. The state used both an employer survey and other qualitative means in order to measure its green employment. Similar to the results of Oregon, Michigan found that 3.4 percent of its total private employment consisted of green jobs.[56] This amounted to 96,767 green jobs in the State of Michigan.[57] In terms of wages, the report

[55] ibid

[56] Bureau of Labor Market Information and Strategic Initiatives. (2009). Michigan Green Jobs Report: Occupations and Employment in the New Green Economy. Detrioit: Michigan Department of Energy, Labor and Economic Growth.

found that Michigan's green jobs do pay high wages. The survey found that the green job hourly wage ranged from $10.05 to $52.93 per hour for green employment with a $20.22 per hour average wage for a worker with low levels of educational attainment.[58] The average total private employment wage in Michigan was $20.27 per hour. Moreover, Michigan employers placed a premium on educational attainment: those with a bachelor degree received $33.62 per hour while those with a vocational degree earned $22.59 per hour.[59] Table 2 below shows the hourly wage results for the selected low, medium, and high wage green jobs.

Wage	SOC	Occupations	Employment	Hourly Wage	Annual Salary
Higher	11-9041	Engineering Managers	9,720	$52.93	$110,090
	11-9021	Construction Managers	8,680	$44.21	$91,950
	41-9031	Sales Engineers	3,870	$40.33	$83,900
	41-4011	Technical and Scientific Products Sales Representatives	11,280	$37.61	$78,230
	17-2141	Mechanical Engineers	24,730	$37.02	$77,010
Moderate	47-2111	Electricians	24,000	$27.18	$56,530
	17-3023	Electrical and Electronic Engineering Technicians	4,240	$24.14	$50,210
	49-9021	Heating, Air Conditioning, and Refrigeration Mechanics	8,230	$22.22	$46,230
	11-9011	Farm, Ranch, and Other Agricultural Managers	11,630	$26.38	$54,870
	47-2152	Plumbers, Pipefitters, and Steamfitters	15,060	$26.08	$54,240
Lower	47-2061	Construction Laborers	27,240	$16.87	$35,100
	53-7081	Refuse and Recyclable Material Collectors	3,350	$15.36	$31,960
	51-2022	Electrical and Electronic Equipment Assemblers	5,290	$14.51	$30,170
	37-3011	Landscaping and Groundskeeping Workers	33,380	$11.71	$24,350
	45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse Workers	28,680	$10.05	$20,900

Source: Michigan Green Jobs Report, 2009

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[57] IBID

[58] Bureau of Labor Market Information and Strategic Initiatives. (2009). Michigan Green Jobs Report: Occupations and Employment in the New Green Economy. Detrioit: Michigan Department of Energy, Labor and Economic Growth.

[59] IBID

As Table 2 shows, there is a large wage disparity between specific green jobs. The green jobs that require little to no formal education, such as farm laborers and construction laborers, earn lower wages relative to those with higher educational attainment such as electricians and mechanical engineers. Finally, a significant finding of the Michigan study showed that Michigan's total private employment declined by 5.4 percent between second quarters 2002 and second quarter 2005, while green employers added 2,517 jobs.[60]

Summing up, both the Oregon and Michigan green jobs studies show that the green employment sector is important for local economies. Green jobs in both states paid higher wages relative to private employment, with higher wages going to individuals who have higher levels of educational attainment. However, the majority of green jobs also provide living wages to individuals with low levels of educational attainment. While these jobs do pay lower hourly wages, green jobs do provide career paths that lead to higher wages.[61] The question remains: If green employment is a vital part of the local economy, what actions can the NPU-G take to capitalize on this important growth sector?

GREEN INDUSTRY TRAINING PROGRAM (GITP)

One method to enhance the neighborhood's ability to capitalize on the growth of the green economy is to provide green jobs training for recently graduated youth and residents looking for improved employment opportunities. GITP will be a partnership between a local community college and the City of Atlanta that will be located in the neighborhood since the neighborhood is already equipped with the infrastructure to support a job training facility. As previously mentioned in the report, Blalock Elementary was closed by the Atlanta Public Schools (APS) system in 2009 because of low attendance and cost savings measures. The workforce development partnership could lease this facility from the APS. Since Blalock is located right next to the Atlanta Industrial Park (AIP) and near the potential solar energy installation at Gun Club Landfill, the proposed training facility at Blalock should be focused on training individuals for the industrial (specifically manufacturing) and renewable energy sectors. Manufacturers are increasingly adopting environmentally friendly production techniques to reduce their material and regulatory costs by lessening

[60] Bureau of Labor Market Information and Strategic Initiatives. (2009). Michigan Green Jobs Report: Occupations and Employment in the New Green Economy. Detrioit: Michigan Department of Energy, Labor and Economic Growth.

[61] IBID

their environmental footprint.[62] The program can tailor the job training it provides to local residents by fitting it to the needs of local AIP employers and manufacturers in the surrounding metropolitan region. However, before we discuss the details of the proposed training program, we will first identify best practices for successful green jobs training programs.

GREEN JOBS TRAINING BEST PRACTICES

The Workforce Strategy Center (WSC) identifies seven effective qualities that successful green job training programs share:

1) *Extensive reliance on data for industry selection, analysis of education and training gaps, and evaluation of outcomes*
2) *Responsiveness to demand for skilled workers in the renewable energy and energy efficiency sectors*
3) *Industry involvement in helping shape or carry out the program*
4) *A systemic approach to establishing regional partnerships and/or relationships among education, workforce development, industry, employer, union, and community-based providers and organizations*
5) *Education and training services and programs mapped for clear career advancement*
6) *Support services to meet the needs and challenges of low-income individuals*
7) *Track record of training low-income individuals for career advancement in jobs*

Source: Workforce Strategy Center 2010

A successful green jobs training program does not need to have all of these seven categories. Indeed, most successful green jobs training programs identified by the WSC only fulfill a few of these seven qualities. The following case studies illustrate the real world application of the best practices described by the WSC. The following case studies are innovative examples of green job community college training programs in California and Oregon. Each of the training programs provide solutions to address the problems inherent in green jobs training:

[62] Society of Manufacturing Engineers. (2010). Green Jobs: They're Not Just Limited to the Energy Sector. Retrieved November 24, 2010, from http://www.sme.org/cgi-bin/get-press.pl?&&20100098&PR&&SME&

1) Employers demand for green workers is highly uncertain,
2) Green jobs require high skill-sets that low income individuals may or may not have, and
3) Certificates and standards that provide employers with assurance that the employee has the required skills are still being developed.[63]

LANE COMMUNITY COLLEGE

Lane College is located in Eugene, Oregon. The college offers two, two-year technical degrees, in Energy Management and Sustainability Coordination. By the end of the two-year degree, individuals within the Energy Management program will be able to "construct energy evaluation technical reports, evaluate energy use patterns for residential and commercial buildings, and appropriately size and recommend renewable energy system types for particular situations."[64] Graduates of the Sustainability Coordination program will be able to "demonstrate a holistic understanding of interdisciplinary subjects related to sustainability, perform environmental audits, laboratory and field tests, conduct and coordinate research, and prepare written reports for internal and external use."[65] One applicable practice that this program has for our neighborhood is that Lane Community College allows students to access mechanical and HVAC rooms across the whole campus.[66] This allows students to perform energy audits with a wide variety of building ages. This practice could be emulated by GITP at Blalock Elementary. The workforce curriculum would entail courses on auditing energy efficiency in industrial facilities as well as local neighborhood homes. NPU-G has a wide variety of aged industrial and residential buildings in which the students could audit and make energy efficiency recommendations. Furthermore, students could provide knowledge to local Atlanta Industrial Park employers on their energy usage and recommend ways to reduce their energy usage.

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[63] Society of Manufacturing Engineers. (2010). Green Jobs: They're Not Just Limited to the Energy Sector. Retrieved November 24, 2010, from http://www.sme.org/cgi-bin/get-press.pl?&&20100098&PR&&SME&

[64] Lane Community College. (2010). Career and Technical Programs: Energy Management Technician. Eugene, OR.

[65] Lane Community College. (2010) Career and Technical Programs: Sustainability Coordinator. Eugene, OR.

[66] Workforce Strategy Center. (2010). Building Effective Green Energy Programs in Community Colleges. New York, New York.

LANEY COLLEGE

Laney College is located in Oakland California. The community college offers four courses in green jobs training. The college is highly skilled at dealing with the problems embedded in dealing with economically disadvantaged students. The first method the college uses to improve the educational outcome for economically disadvantaged students is to provide foundational courses that teach students basic academic skills.[67] These foundational offerings are not the only method the college uses to improve the outcome for its students: the college also provides its students with full-time case managers.[68] These case managers help the student find resources that will help them stay enrolled in the course and complete the program. The socio-economic characteristics of the neighborhood point to the fact that the GITP education professionals will be encountering economically disadvantaged students. GITP should provide neighborhood students with foundation courses in math and science as well as case managers to help them succeed. Moreover, the program should offer internship positions with local neighborhood and regional employers to teach students valuable foundational job skills that can only be acquired in the workplace.

COLUMBIA GORGE COLLEGE

Columbia Gore Community College has a green workforce development program that is highly connected to industry in the renewable energy field, specifically wind. The program offers a one or two year training program in Applied Science. Within these degrees are extensive courses directed at providing the student with up-to-date employer desired skills. The college meets regularly with industry leaders to help alter the training courses that the community college offers if the industry sees new demand in a particular skill.[69] Moreover, the community college, together with the American Wind Energy Association, is attempting to develop a standardized training certificate for students looking to enter the renewable wind energy field.[70]

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[67] Laney Community College. (2010). Green Jobs Training. Retrieved November 24,, 2010, from http://www.laney.edu/wp/green/

[68] Workforce Strategy Center. (2010). Building Effective Green Energy Programs in Community Colleges. New York, New York.

[69] IBID

Columbia Gorge College is an excellent example of how workforce development organizations can connect to key leaders in the industry to develop relevant training programs for their students. When workforce development organizations are able to produce graduates with the skills employers are looking for they improve the employment outcome for the graduating student. The neighborhood training program could emulate this by connecting GITP with manufacturers in the AIP as well as any green business that locate within it. Any programs offered by GITP must have input from local employers for the developing a curriculum, the program must maintain this connection throughout the life of the program.

ATLANTA INDUSTRIAL PARK

The Atlanta Industrial Park (AIP) is a center of employment located in the neighborhood. The AIP contains manufacturing and distribution businesses that have specific employment needs which will be met by the GITP. The United States Department of Labor (DOL) has established a competency model that shows the general skills that manufacturing employers are looking for in prospective employees.[71] Figure 29 shows the nine level competency pyramid. The first three levels represent foundational skills that are demanded by manufacturing employers. The proposed GITP will initially focus on these core competencies for the education curriculum. For instance, GITP will offer courses that focus on math and science relating to manufacturing. Furthermore, these courses can be taught in a group to help the student learn problem-solving techniques in a teamwork setting. The next two levels of the competency model represent industry wide related skills. These competencies are skills that are applicable to the manufacturing industry as a whole.

A partnership between GITP, the AIP, and other local Atlanta manufacturers will help to ensure that the skills taught in the classroom have real world applicability. This will make the graduating student more competitive in the job market. The last four sections of the pyramid (6-9) focus on occupation related skills. These are skills that are usually specific to the workplace. For instance, a certain food manufacturer may require different occupational competencies than another food manufacturer. In order to provide students with a better transition to the workplace, GITP will seek to provide students with internship

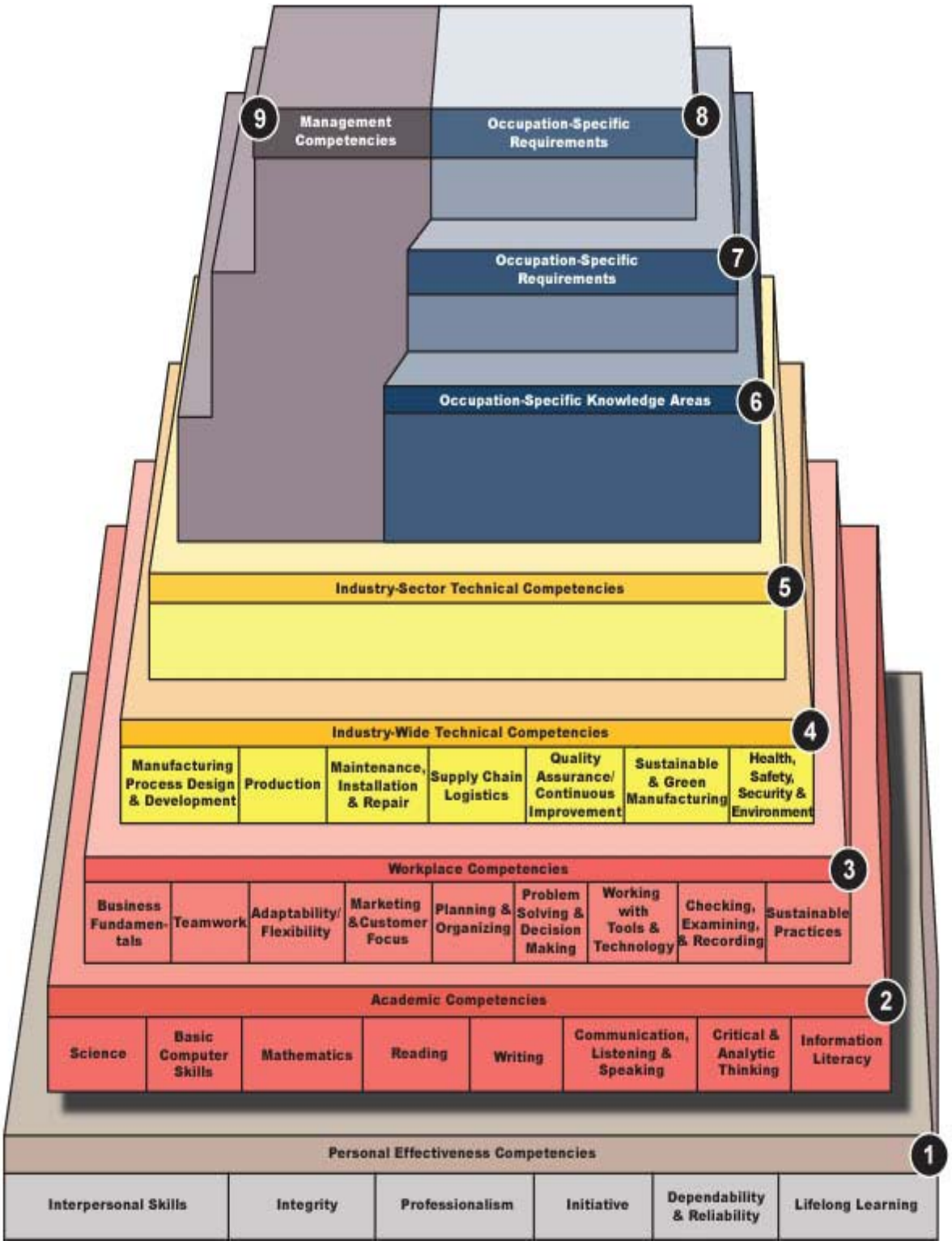
[70] Columbia Gorge Community College. (2010). Renewable Energy Technology: Career Opportunities. Retrieved November 24, 2010, from http://renewableenergycareers.org/career-opportunities

[71] United States Department of Labor. (2010). Advanced Manufacturing Competency Model. Retrieved Novermber 24, 2010, from http://www.careeronestop.org/COMPETENCYMODEL/pyramid.aspx?HG=Y

opportunities within the AIP and, also, at other manufacturing firms in the Atlanta area. The internship program will help to better connect students with employers and will also prove to them that what they are learning in the classroom is important in a real world work environment.

While the preceding paragraph has stressed the manufacturing sector, there are other skills that should be taught in the GITP coursework. Due to the adverse economic environment in which many graduating students are entering the job market, GITP should provide students with the entrepreneurial skills to help them start their own business, be it a manufacturing firm or not. Moreover, GITP could help connect entrepreneurs at the Georgia Institute of Technology who are ready to commercialize and market their green innovation. GITP could lease out obsolete industrial space located in AIP to provide Georgia Tech innovators with industrial incubator space. GITP could then match innovators with students and graduates of the GITP program who have been given the necessary skill set to manufacture green products. Finally, the GITP program needn't solely focus on green manufacturing. GITP will provide training to the numerous projects within this master plan. For instance, GITP could provide horticulture training for the urban agriculture projects recommended in this report. Moreover, GITP could provide training for the renewable energy installations proposed on Gun Club Landfill. GITP students could be taught how to install large-scale solar installations, calculate the most efficient angle to collect solar energy, and regularly adjust, monitor, and maintain the solar installation to achieve the maximum energy output.

FIGURE 29: ADVANCED MANUFACTURING COMPETENCY MODEL



Source: United States Department of Labor, 2010

WORKFORCE DEVELOPMENT RECOMMENDATIONS

Establishing the Green Industry Training Program is a valuable step that NPU-G can take to provide jobs for local residents. The training program will provide residents with the opportunity to learn new skills that lead to jobs with higher pay and a career path. The neighborhood is well positioned to create the GITP program. NPU-G already has the infrastructure necessary to support a workforce development training facility. These infrastructures include Blalock Elementary and the Atlanta Industrial Park. Moreover, the GITP program aligns with the City of Atlanta's sustainability goals because it can provide green job training to local municipal employees, especially those dealing with logistics or other large-scale infrastructure. Unlike the Southeast Weatherization and Energy Efficiency Training Center (SWEET) already located within the city, the proposed NPU-G workforce development facility would provide job training for the manufacturing and renewable energy sectors. Since Blalock is located near the Atlanta Industrial Park and other distribution facilities, the training that occurs at the proposed NPU-G facility will focus on industrial sectors.

There are a variety of funding options for this program. The City of Atlanta is a potential funding source since they are currently looking to invest in workforce development programs that can train municipal employees. The neighborhood could also use the bond revenue from the Donald Lee Hollowell/MLK Tax Allocation District to fund infrastructure projects for preparing Blalock Elementary for technical training use. However, it is likely that the neighborhood will have to use innovative funding strategies to keep the program running once the initial investments are made. One path to achieve a sustainable revenue stream would be to have manufacturers and local employers sign a contract that requires the employer to give a portion of the money the company saves on reduced energy and material usage to GITP. Moreover, if the GITP manufacturing partner is able to save money on reduced material and energy costs they may be more prone to reinvest in the program. Another option would be to link local manufacturers and employers with the range of local financing options offered by the city. These financial incentives include: Solid Waste Facility Bonds, Industrial Revenue Bonds, Clean Renewable Energy Bonds, New Market Tax Credits, Renewal Community Commercial Revitalization Deduction, and a Renewal Community Environmental Clean-Up Cost Deduction.[72] Industrial employers could be willing give a portion of these financial incentives to GITP provided that the program provides the labor to install the

[72] City of Atlanta. (2010). Division of Sustainability. Retrieved November 24, 2010, from http://www.atlantaga.gov/mayor/sustainability.aspx

green production infrastructure. Industrial partners may also be eligible for Energy Efficiency and Conservation Block Grant distributed by the State of Georgia.[73] Other financing options also include support from local foundations.

Next Steps for Workforce Development

1) The neighborhood will establish a task force, which should include City of Atlanta officials, local manufacturing employers, and workforce development professionals.
2) This coalition will identify community colleges or other technical training programs to provide the educational expertise for the program.
3) The neighborhood will contact the Atlanta Public Schools system to negotiate a reasonable lease agreement for Blalock Elementary.
4) The coalition will find permanent funding sources for the initial costs of the workforce development program.
5) The coalition will find continued funding sources and revenue streams to make GITP financially sustainable for the future.
6) A governing board of local manufacturing partners, neighborhood representatives, workforce training professionals, and City of Atlanta officials will be created once funding for the GITP program is secured.

[73] Georgia Environmental Finance Authority. (2010). ARRA Energy Information. Retrieved November 24, 2010, from http://www.gefa.org/Index.aspx?page=476

SCHOOLS AND EDUCATION

For most communities, local schools play a pivotal role in the development of an area's child population, allowing them to receive an education. In addition to this role, local schools can also act as an unofficial community center for residents of all ages, especially in areas where there is no one "town center." Within NPU-G, however, only two public schools are currently in operation to conveniently serve local school children: Boyd Elementary, which is located on Johnson Road in the eastern portion of the neighborhood, and Scott Elementary, which is located on Hollywood Road at the northern edge of the area.

CLOSED EDUCATIONAL FACILITIES

While only two public elementary schools are located within NPU-G, Atlanta Public Schools (APS) owns additional property in the area that in the past has served the local community as active, operating educational facilities. Due to population shifts over the past few decades, APS has closed schools not only in NPU-G, but also in other parts of Atlanta proper. In the past fifteen years, three schools have been closed: Archer High School, located on Perry Boulevard, in 1995; Williams Elementary, located on Jackson Parkway, in 2009; and Blalock Elementary, located on Hollowell Parkway, in 2009 (each shown in Figure 30 below).

FIGURE 30: THE LOCATION OF SCHOOLS IN NPU-G

Source: Author's creation on Google image

In each case, a decrease of local residents within the schools' attendance zones had resulted in the facility's closure. The largest of the three, Archer High School, was merged with Harper High School to form Harper-Archer High School.[74] The closure of Williams and Blalock was due to the demolition of four major housing projects within the NPU: Perry Homes, Hollywood Courts, Bowen Homes, and Bankhead Courts, all of which led to a decrease in local population. The latter two projects also included the Williams Elementary and Blalock Elementary properties respectively.

[74] Bono, Richard. "Archer cluster without a home after high school closes." *Atlanta Journal Constitution.* 25 May 1995: 10D

Facility Disposal Policy

As with most government entities, APS has policies in place regarding the disposal of property assets, especially in cases of unused sites such as the three closed schools. In cases where market conditions do not warrant a sale, APS has provisions that would permit outside entities to lease a property for a specific amount of time. According to the policy, a one year lease requires approval from the Superintendent of APS, while leases up to five years require approval from the full APS Board. Generally, long-term leases (more than five years) are rarely approved by the Board, largely due to an emphasis on selling the affected property in question. If a property is placed on the market for sale, APS is required as a public entity to solicit bids from interested parties in order to allow for a fair process in disposal of the property. If a parcel is to be redeveloped, the buyer must consult with the local NPU for community input, as well as coordinate with existing public redevelopment plans for the surrounding neighborhood.

Archer High School Current Usage

Since Archer High School closed as a permanent school fifteen years ago, the Perry Boulevard complex has served as a "temporary facility" for other high schools within the city of Atlanta to utilize while students' home schools are under extensive renovation. Currently, students at Benjamin E. Mays High School are using the Archer complex through the fall of 2011. This policy, while allowing students of a particular high school to remain together rather than split up during a renovation, does not take into consideration local high-school age students when allocating students in attendance zones. As a result, a student that may live next door to the Archer site would not be able to attend the school, and instead would be bused to Douglass High School, which is located four miles south in Collier Heights. Meanwhile, students from Mays High are bused to and from the Archer site, which is a distance of nine miles from the Mays attendance zone centered in Southwest Atlanta.

URBAN AGRICULTURE FOR ARCHER SITE

With the expected completion of the Mays High School renovation in December 2011, the Archer site will once again be vacant. Of course, it is a possibility that the complex will continue to be used as a temporary school as other APS schools continue to undergo needed renovations that require removal of students. However, with parcel coverage of nearly 27 acres, the site provides multiple opportunities for redevelopment and/or adaptive reuse. One possibility for the Archer site is conversion into a facility for urban agriculture, which would be appropriate given the complex's location in an urban municipality. The large amount of land is conducive to growing outdoor crops, particularly on the western edge of the parcel, which is currently comprised of athletic fields and a large parking lot. If necessary, demolition of the existing buildings would free up additional land for crops as well.

Conversely, the use of hydroponic growth techniques (which do not require soil), could allow for the growth of indoor crops using the existing school complex, thereby reducing construction/demolition costs for the operator. In addition, the existing on-site classroom layout would enable space for a possible teaching laboratory, and may be useful for local educational institutions (such as local community colleges), to utilize the space. To allow for a long set-up period, this urban agriculture proposal, if operated by an outside institution, would most likely require a lease longer than five years from APS in order to operate. Therefore, to avoid having to lease out the property for an extensive amount of time, APS could sell the property outright or continue to operate the school as a partner in an urban agriculture initiative. Finally, an alternate site at the corner of Hollywood Road and Perry Boulevard would also be conductive to urban agriculture development if the Archer site were to continue being used as a temporary school.

Elementary School Sites

As mentioned earlier, the closure of Blalock Elementary and Williams Elementary occurred at the same time as the closure of four major housing projects within NPU-G. With both of these schools located directly adjacent to these projects (Blalock at Bankhead Courts, Williams at Bowen Homes), these sites are prime sites for redevelopment in conjunction with plans for the housing project sites. In the case of Blalock Elementary, its location within the Atlanta Industrial Park allows the existing classroom buildings to be repurposed for educational settings conducive to serving an adult population. Specifically, the buildings could house workforce development programs operated in conjunction with employers in the industrial park. At Williams Elementary, the complex is the most likely of the school facilities to be reused as a traditional school, and, given its location in the middle of a residential area, especially if the replacement of Bowen Homes contains a substantial residential component. In addition to use as a school, Williams could also potentially act as a community center not only for the new development, but for residents along the Jackson Parkway corridor (which would necessitate a new road connection to the site).

FOOD AND CULTURE

For many residents in the city of Atlanta, access to a major supermarket or a restaurant is as easy as a short walk or drive, with a wide variety of options to choose from. However, within NPU-G, this scenario currently does not exist. Even though this NPU is home to thousands of residents (and was even more populated before the demolition of the NPU's four housing projects), it has been chronically underserved by food-based establishments, and is shown to be a food desert. This in turn has forced local residents to take considerably longer trips to either Midtown or Cobb County in order to buy food.

Our proposals to increase access to food-related businesses include traditional solutions like grocery stores, but also incorporate innovative ideas like farmer's markets, community gardens, urban agriculture, and food carts in order to provide more choice to NPU-G residents. There are opportunities for job-creation, education, and providing locally sourced produce with the implementation of these ideas. As is the case with each of these recommendations, our proposals to address the lack of fresh food in the NPU are designed to improve quality-of-life issues and create opportunities for economic development.

Creating a sense of place and celebrating local identity are two important aspects of community. NPU-G has a rich culture and history that is largely forgotten in the neighborhood. After meeting with several residents of the community, we learned about this history of and their desire to have the oral history preserved in writing. As another vehicle to celebrate the rich culture present here, we suggest incorporating public art. Public art can be used in a number of different areas- from streets and intersections, to parks and trails. Public art can vary from sculptures and structures, to paintings and murals, to performances. Residents from the community can be involved in commissioning or creating the art, and educational programs for children can be created in conjunction with the public art program.

FRESH FOOD ACCESS

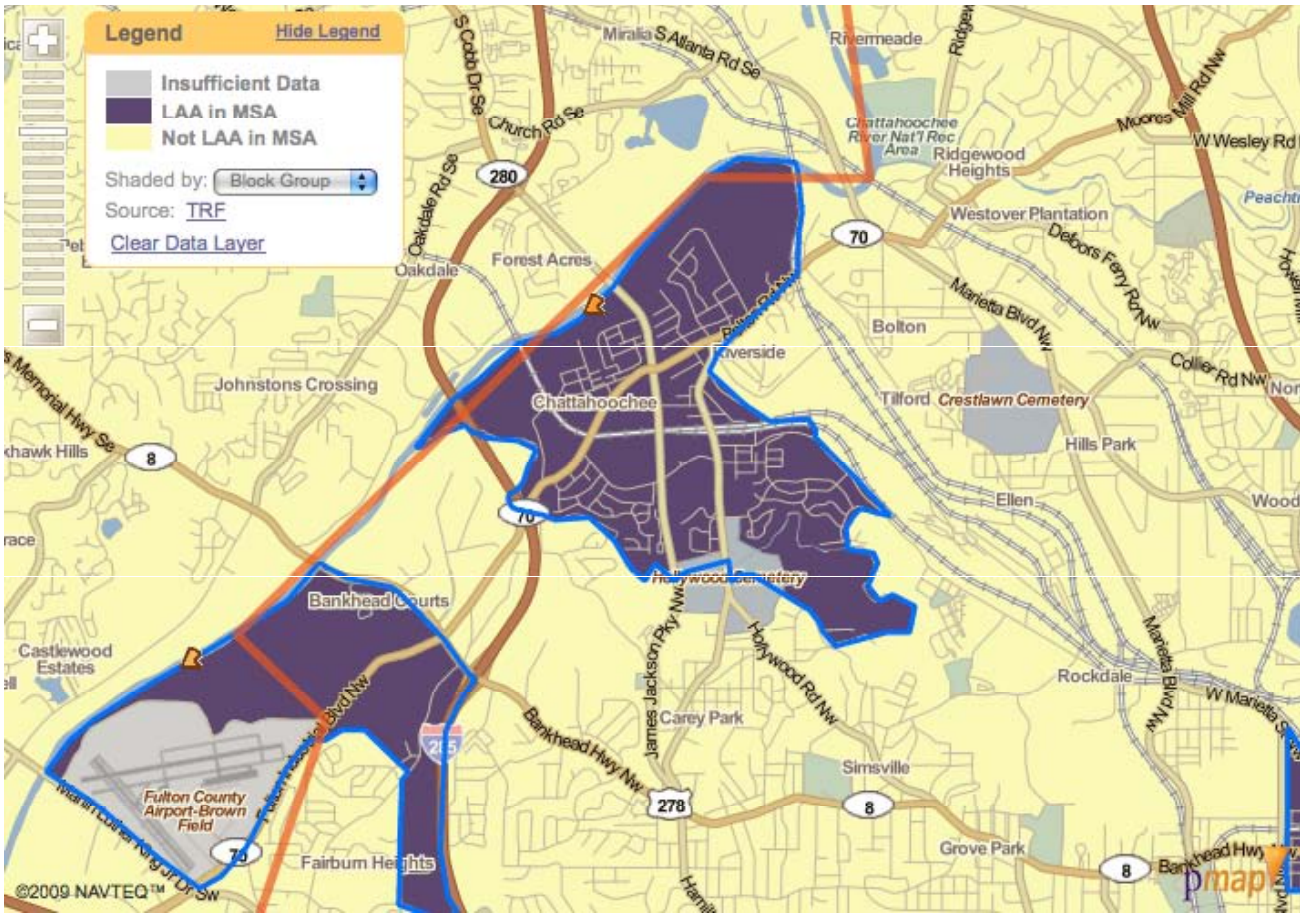
Access to fresh food is a major concern for residents of NPU-G. As residents routinely have said, there is nowhere within the neighborhood to shop for fresh, healthy foods. Thus, residents of NPU-G travel outside the neighborhood to do their grocery shopping. It can be difficult for residents to get to one of these grocery stores, as NPU-G is somewhat isolated by the Chattahoochee River to the west, and the huge rail yard to the east. There are limited pathways across these two isolating masses, so residents must travel far in order to reach a grocery store.

Lack of access to fresh food is a serious problem for many communities across the country and studies have been conducted to identify where "food deserts"—areas where residents have little or no access to healthy and affordable food—exist. The Brookings Metropolitan Policy Program and The Reinvestment Fund performed a detailed analysis of supermarket access in ten metropolitan areas around the country, including Atlanta. The analysis revealed a large portion of NPU-G lacks access to fresh food[75], as shown in Map 7, below. The map, produced by The Reinvestment Fund, shows areas in Atlanta that are considered Low Access Areas (LAA), which are shaded in purple. LAAs were determined based on low- and moderate-income communities' distances from supermarkets, as compared to similar higher-income counterparts. A large portion of NPU-G is shown as a low access area.

PolicyLink and the Food Trust reviewed hundreds of studies on fresh food access, and concluded that the perception of an inequitable dispersion of fresh food stores in low-income communities is accurate. These studies have also shown that a lack of access to healthy food is a serious concern for public health. Organizations like The Food Trust, The Healthy Corner Store Network, the Brookings Institute, and PolicyLink provide research, information, and solutions on how to address the problem.

[75] The Reinvestment Fund and Brookings Metropolitan Policy Program (2010). PolicyMap: TRF Supermarket Study of Low Access Areas. http://www.trfund.com/brookings.html

MAP 7: AREAS WITH LOW ACCESS TO FRESH FOODS

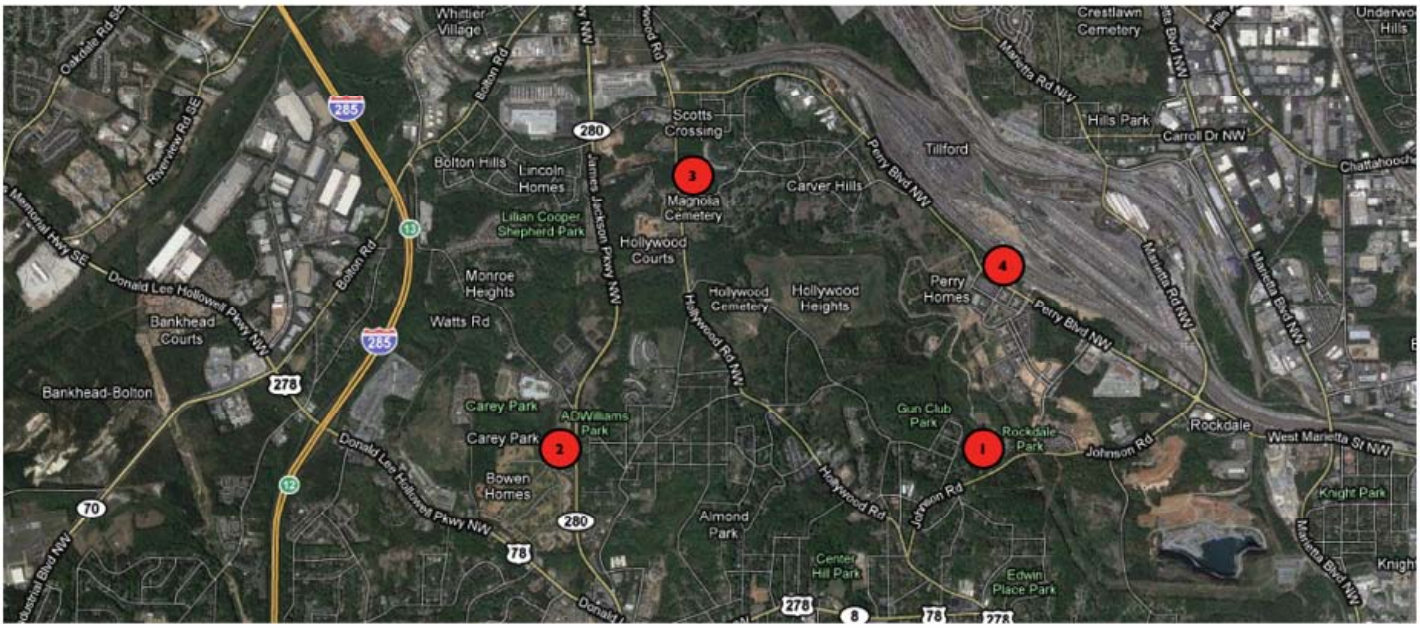


Source: http://www.trfund.com/brookings.html

In response to the lack of access to fresh food, we recommend three key initiatives. The locations for these initiatives are depicted in Figure 31:

- The creation of community gardens
- The development of urban agriculture
- The development of corner store/farmer's markets

FIGURE 31: LOCATIONS OF ALL PROPOSED GARDENS, FARMS, AND GROCERY STORES



1 Rockdale Park Community Garden

2 A.D. Williams Park Community Garden

3 Hollywood - Perry Urban Agriculture Site

4 Grocery Store/Farmers' Market at West Highlands

Source: Author's Creation on Google Image

The local food initiative has already started in other neighborhoods in Atlanta. At the end of November 2010, the Old Fourth Ward neighborhood announced that a four-acre urban farm was going to be developed. With participation from the Wheat Street Baptist Church, which leased the land, Truly Living Well Natural Urban Farms will be the entity developing the farm. It is supported by Atlanta City Councilmember Kwanza Hall, and is receiving investment from the Atlanta Falcons Youth Foundation. The urban farm is slated to begin ground breaking in early December 2010. The new farm will also be a market place and training center for Atlanta residents interested in urban agriculture.[76] In addition, many neighborhoods and schools have started local community gardens.

COMMUNITY GARDENS

Our first proposal to increase food access in NPU-G is to set-up a number of community gardens throughout the neighborhood. Community gardens will allow families that participate in the program to grow their own fruits and vegetables for their own consumption, reducing the time and money needed to purchase produce at a grocery store or market. Community gardening stimulates social interaction, encourages self-reliance, beautifies neighborhoods, and produces nutritious foods, while reducing family food budgets.[77] Involvement in the community garden will also improve technical skills used in fields such as food production and agriculture. Our proposal also aims to use community gardens as one gateway to the education and skill sets required to operate the urban agriculture initiative in NPU-G that will be discussed later in our second proposal.

The first site chosen to locate a community garden is in Rockdale Park on the eastern side of NPU-G (Figure 32). This site was chosen due to its location near the West Highlands residential development and Boyd Elementary School. This location is ideal because it allows both residents and children or students of the community to become involved in the creation and success of the community garden.

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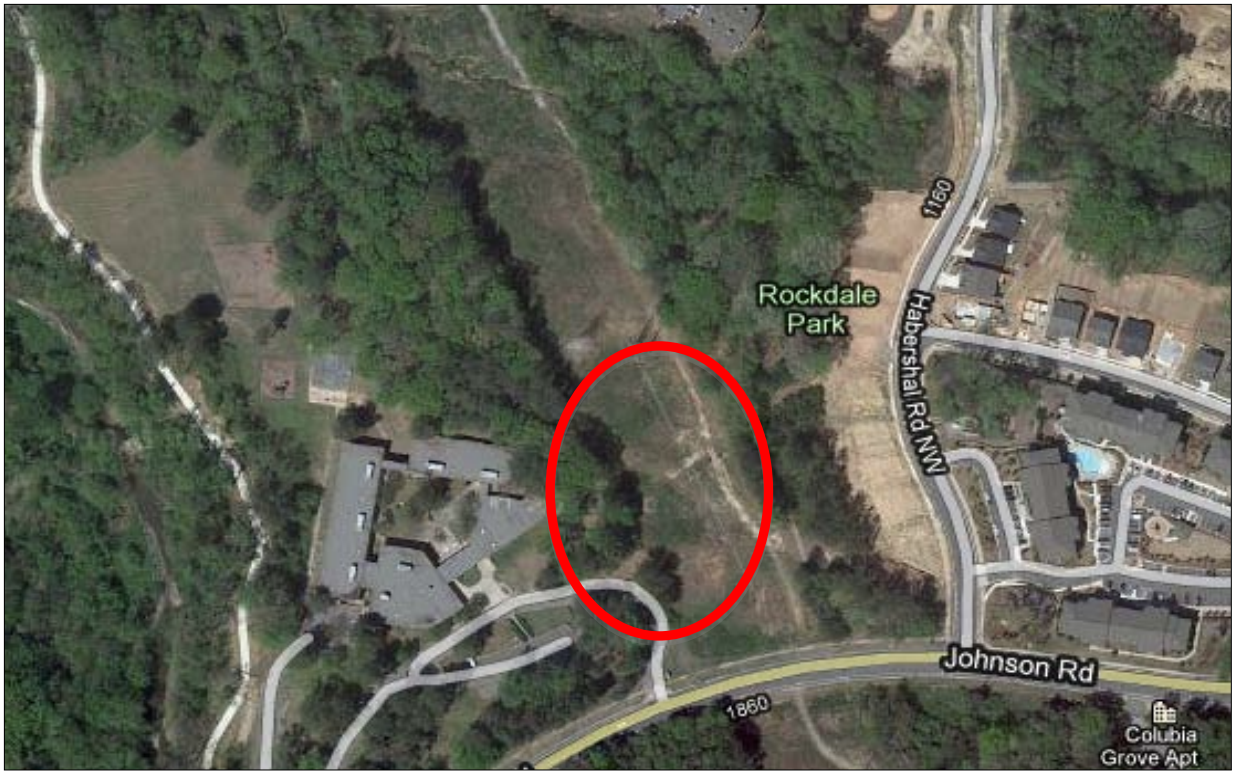
[76] Wheatley, T (2010, November). Old Fourth Ward to Get Four-Acre Urban Farm. Creative Loafing. Retrieved 29 November 2010 from http://clatl.com/freshloaf/archives/2010/11/29/old-fourth-ward-to-get-four-acre-urban-farm?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed:+freshloaf+%28Fresh+Loaf%29

[77] "Community Gardens" The Atlanta Food Bank. 2010.www.acfb.org/projects/community_garden/

FIGURE 32: PROPOSED LOCATION FOR COMMUNITY GARDEN #1: ROCKDALE PARK



Source: Author's creation over Google image

Children will be a main focus of involvement in the community garden project for a number of reasons: First, it is important to teach children the importance of eating healthy and living and active life and involvement in the community garden will help develop both of these lessons. Second, involvement in the project will teach them a new skill set that may lead to a career in food production and agriculture. Finally, since NPU-G has the highest proportion of children in the age groups of 0-4 and 5-17 in all of Atlanta,[78] it is vital that programs be created to support their mental and physical growth and well-being. A site located in a park was also chosen because it follows the guidelines and proposals for food access set forth by the City of Atlanta in its 2010 Sustainability Plan.[79] However, in order to fully reap the benefits of the location in Rockdale Park, the walking paths that line the West Highlands development will need to be extended. This will create access to the community garden as well as the park and school from the

[78] United States Census. Block Group Data. 2000.
[79] "The City of Atlanta 2010 Sustainability Plan" Division of Sustainability. City of Atlanta. 2010. http://www.atlantaga.gov/client_resources/mayorsoffice/sustainablity/coa2010%20sustainability%20plan.pdf

residential development and also create a level of connectivity between all three sites and the rest of the community.

The second community garden site is in A.D. Williams Park on the western side of NPU-G (Figure 33). This site was also chosen due to its proximity to residential developments and schools. This site is located near Williams Elementary School, the new mix-use development proposed for Bowen Homes, as well as existing residential neighborhoods on the western side of NPU-G. Similar to the location of the Rockdale Park Community Garden, this location will also allow both residents and children or students to become involved in the creation and success of the community garden. Having a site located centrally both in the western and eastern portions of the NPU will allow a number of residents to reap the benefits derived from community gardens.

FIGURE 33: PROPOSED LOCATION FOR COMMUNITY GARDEN #2: A.D. WILLIAMS PARK

Source: Author's creation over Google image

Both sites also allow for expansion of the community gardening program from the initial 0.2-acre site as the program grows in popularity and involvement. Both parks are large enough to handle any growth required to expand the program, but there are also a number of other city parks in the NPU that may serve as potential sites for community gardens. Locating community gardens in city parks as set forth by the City's Sustainability Plan also avoids using tax-yielding land for uses that produce little or no taxes for the community. This is an important consideration for NPU-G as it has a disproportionate amount of tax-exempt property.

Cooperation with a number of programs aimed at fostering community gardening is proposed to increase the success of this initiative as well as to lay the foundation for educating the residents on community gardening and providing some of the capital and tools needed to implement this proposal. One proposed partner is the Atlanta Urban Gardening Program run by the University of Georgia. This program provides tailored education programs for students and seniors on creation and maintenance of community.[80] Two other proposed partners include the Atlanta Food Bank and Park Pride Atlanta. These two partners also provide valuable education on the creation and upkeep of community gardens, and provide some capital and tools needed in community gardens as well. For example, the Atlanta Food Bank, via its Community Gardens Project, provides garden hoes, diggers, pruners, rakes, shovels, and various seeds to get community gardens up and running.[81] Supportive programs such as these can be vital to the success of the proposed community gardens.

[80] Atlanta Urban Gardening Program. The *University of Georgia Cooperative Extension.* University of Georgia. http://www.ugaextension.com/fulton/anr /documents/AUGPBrochure.pdf

[81] "Community Gardens" The Atlanta Food Bank. 2010.www.acfb.org/projects/community_garden/

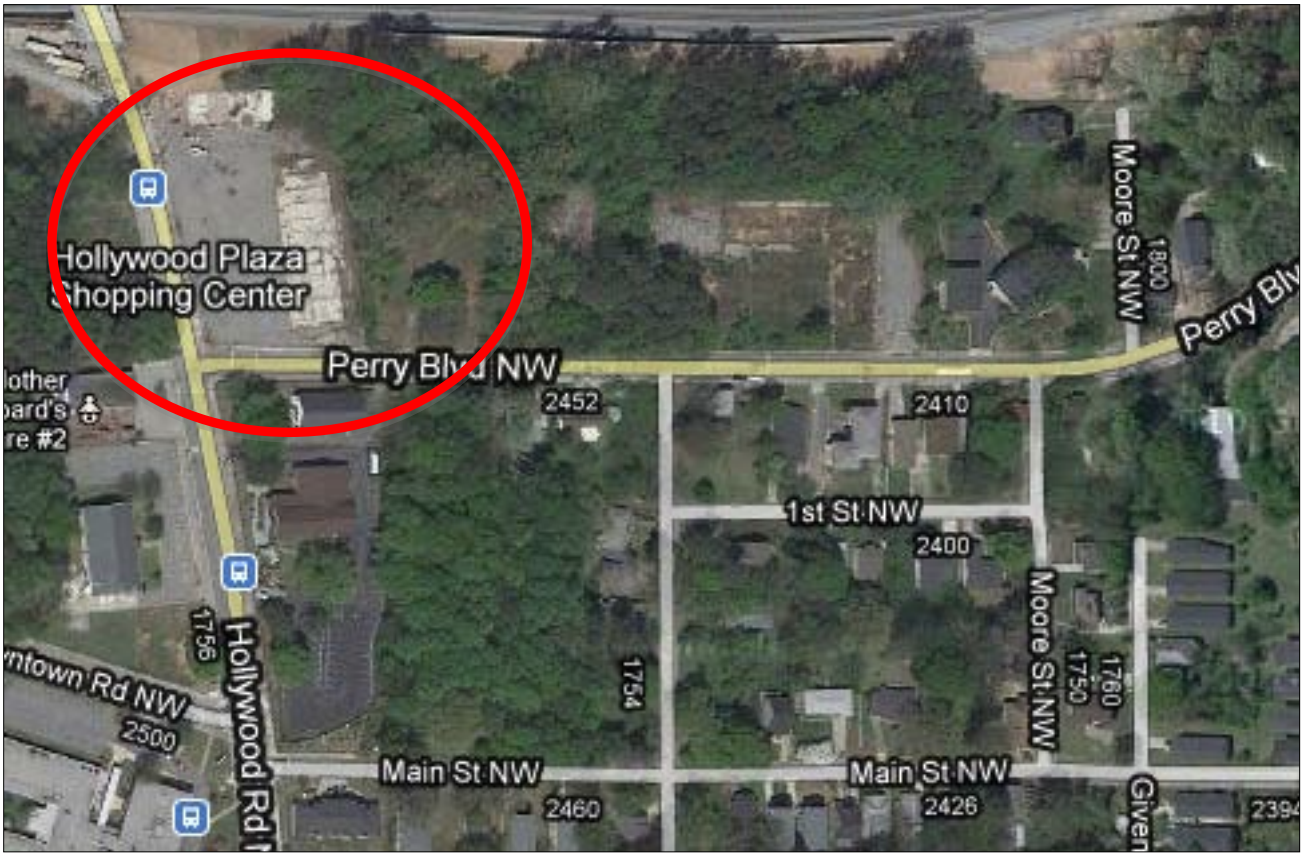
URBAN AGRICULTURE

Our second proposal to increase food access in NPU-G will be to develop urban agriculture sites within the neighborhood. Urban agriculture is the growing of fruits, vegetables, and/or flowers within the urban or city boundary.[82] Urban agriculture can occur both indoors and outdoors and includes community gardens. However, this proposal involves incorporating urban agriculture in NPU-G at the industrial scale. Incorporating urban agriculture at this scale into the neighborhood will provide a number of benefits for the community. First, urban agriculture will make local produce finally available for purchase within the NPU through a farmers' market or proposed cooperation with a new local grocery store discussed later in our third proposal. Second, urban agriculture will provide much needed employment opportunities for the community that will be aimed at community residents. This is proposed by teaching agricultural skills at the community gardening level and using the proposed community gardens as a gateway for employment into these proposed urban agricultural initiatives. In addition, the skill sets needed for urban agriculture can be incorporated via the green workforce development proposal discussed earlier. Finally, the proposal to redevelop an abandoned strip mall discussed below will create a tax-yielding site for the neighborhood as well as improve the aesthetic of the community by redeveloping the blighted site. Urban agriculture will also help address the lack of fresh food access in this and other Atlanta neighborhoods, a goal of the 2010 Sustainability Plan.[83]

[82] "The Vertical Farm Project" *The Vertical Farm.* 2010. http://www.verticalfarm.com/

[83] "The City of Atlanta 2010 Sustainability Plan" Division of Sustainability. City of Atlanta. 2010. http://www.atlantaga.gov/client_resources/mayorsoffice/sustainablity/coa2010%20sustainability%20plan.pdf

FIGURE 34: PROPOSED SITE FOR URBAN AGRICULTURE



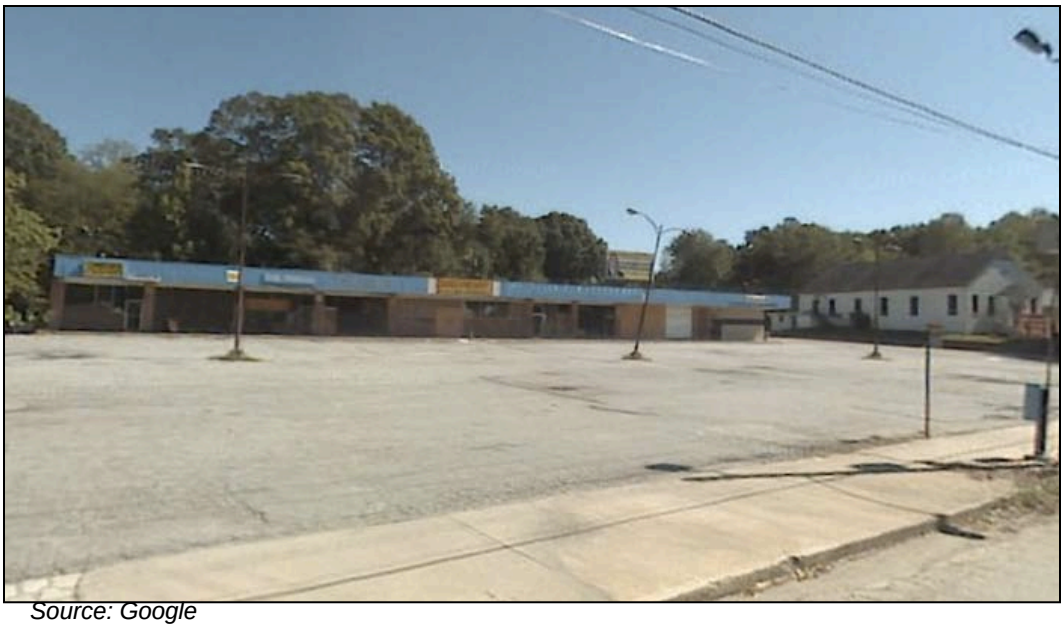
Source: Author's creation over Google image

The site chosen to locate the indoor agricultural initiative is the abandoned Hollywood Plaza Shopping Center located in the northern section of NPU-G on the corner of Hollywood Boulevard NW and Perry Boulevard NW (Figure 34, above, and Figure 35, below). We propose that the structure be adapted for hydroponic agriculture, or soil-less agriculture. Indoor hydroponic urban agriculture is desirable because it requires less use of land, soil, and water, produces less waste, and uses very little, if any, pesticides for the protection of the crops.[84] Figure 36 below depicts how one set-up of indoor agriculture might look. The land behind the strip mall may also allow for some expansion of the initiative by either expanding the current structure or building greenhouses to complement the current structure. The site also lies on the border of the NPU in the north and the heavily traveled thoroughfare of Hollywood Boulevard NW. Its visibility can help in attracting customers for on-site sales.

[84] "The Vertical Farm Project" *The Vertical Farm.* 2010. http://www.verticalfarm.com/

The redevelopment of this site will create an improved aesthetic gateway into the community from the north, and highlight a focus of sustainability in NPU-G's overall redevelopment plan.

FIGURE 35: PROPOSED URBAN AGRICULTURE SITE: FRONT VIEW



Source: Google

FIGURE 36: RENDERING OF INDOOR URBAN AGRICULTURE CENTER

Source: www.oneprize.org

The success of an urban agricultural initiative is contingent on a number of parallel programs and other initiatives. First, cooperation with the local proposed grocery store or farmer's market will is vital to creating an outlet for the urban agriculture products. Having a guaranteed buyer from the beginning of the initiative will reduce the uncertainty and risk of the project. A restaurant and/or a scaled down farmer's market that complements the proposed grocery store could also be incorporated into the structure to increase the revenue generation of the initiative as seen in Figure 36. Second, a focus on high-yielding and high-revenue producing crops should be considered when selecting the types of crops to grow. Some of these crops include various flowers and herbs, soybeans, and even vanilla.[10] Crops that are high-yield both in revenues and quantity are important to consider, as they will ensure the profitability of this initiative at a much faster pace and reduce the time needed for investment recovery. Finally, agricultural and food production skill-sets should be taught via the proposed community gardening initiatives as well as the green workforce development initiative, in order to keep employment opportunities within the community and have the residents reap the benefits of the urban agriculture initiative both financially and physically via food access.

FIGURE 37: RENDERING OF INDOOR URBAN AGRICULTURE CENTER

Source: www.oneprize.org

[10] "Intensify Urban Farming in the City by Growing Crops" CropsReview.com 2010. http://www.cropsreview.com/urban-farming.html

Leadership and financial support for this initiative may be available from a number of sources. The parcel of land seen in Figure 34 is currently owned by Perry Boulevard, LLC, which is a subsidiary of Brock Built.[85] Brock Built is invested in a number of projects throughout NPU-G. Having an abandoned site on a large parcel of their property, Brock Built may find the urban agriculture project worthy to finance for the revenue it will yield as well as the improvement in property values and employment prospects for NPU-G residents. Also, the location of the proposed site lies within the boundary of the Perry-Bolton Tax Allocation District (TAD). With this, the project can be eligible for funding available to stimulate development of new retail and businesses in this underserved area.[86] With a site location owned by Brock Built and its proximity within the TAD, this may accrue the level of funding needed to finance an initiative of this magnitude.

FARMER'S MARKET AND GROCERY STORES

There is clearly a need for residents of NPU-G to be able to buy food items within the community. New grocery stores can also bring needed jobs to the community, and residents of the neighborhood are suited to fill the types of jobs created by grocery stores and farmer's markets, in addition to the construction jobs that would be created. The creation of a new market can spur additional private sector development, where complementary services like pharmacies, laundry services, restaurants, or banks locate.

At present, there are no plans for a retail component within West Highlands. Unless new projects are undertaken, the residents on this side of the neighborhood will continue to suffer from a lack of fresh food access. A 1999 report by HUD found the untapped retail market within "inner-city neighborhoods"- those with higher poverty and lower incomes than the cities that surround them- was very large. Yet many inner-city communities, like NPU-G, were "under-retailed."[87] Since the time that report was released, over ten years ago, there has been no movement to increase retail opportunities in NPU-G. There is a clear need for more retail, especially everyday retail, in this neighborhood.

[85] "Parcel Data" *Geographic Information Center.* City of Atlanta. 2010.

[86] "Perry Bolton" *Tax Allocation Districts*. Atlanta Development Authority. 2010.

[87] U.S. Department of Housing and Urban Development (1999). New Markets: The Untapped Retail Buying Power In America's Inner Cities. p. 1-35.

In meeting this need, we first propose to focus on smaller, independent stores. Larger stores have higher capital costs, and supermarkets are focused on the bottom line. With profit margins that average about 1%, their bottom line is very tight. Large chains often cite lack of profitability as a reason why they won't locate in low-income areas; it's a barrier to investment.[88] As an example, a year ago, a Publix grocery store closed in Atlanta's historic Westside Village area. The closing caused significant distress, as this store was located in an area similar to NPU-G, where there is poor access to fresh food. . Publix officials said the store closed because it did not meet sales goals. As PolicyLink's Healthy Food Retailing Toolkit reports, a survey of retail executives found that their top three concerns for locating in areas like NPU-G were: insufficient customer base, lack of consumer purchasing power, and crime (or the perception of crime). In addition, they cited greater operating costs in urban areas where rents and taxes are higher. As a challenge, small stores face the same operating costs, but may lack some of the scale advantages that larger stores have, where they can offer lower prices to customers. However, creative collaborations can help to overcome this challenge: small stores can form cooperatives and leverage joint buying power, marketing, or sharing storage facilities. PolicyLink reports that in the 1990s, a grocery store cooperative called the Certified Grocers of California facilitated the rise of independent grocery stores in Los Angeles. An example of a buying cooperative that the small grocery stores could model themselves after is that of Ace Hardware, whose stores are owned and operated independently, but who purchase collaboratively to obtain the lowest prices.[89] Atlanta has Ace Hardware, and NPU-G could consult with these stores to learn more about starting a cooperative.

The grocery store can also act as a small farmer's market, where produce from the community gardens and urban agriculture site can be sold. As the Healthy Food Retailing Toolkit suggests, farmer's markets can serve as small business incubators, giving residents the opportunity to sell goods like baked goods, jams, and other handcrafted items. The ability to sell their locally grown produce provides a full-circle solution to residents of NPU-G, where the production of food, the creation of jobs, and the sale of that food within the community meet current needs.

[88] PolicyLink (n/d). Equitable Development Toolkit: Health and Place Toolkit Group: Healthy Food Retailing. http://www.policylink.org/site/c.lkIXLbMNJrE/b.5137405/k.6042/Healthy_Food_Retailing.htm

[89] PolicyLink (n/d). Equitable Development Toolkit: Health and Place Toolkit Group: Healthy Food Retailing: Existing Stores. http://www.policylink.org/site/c.lkIXLbMNJrE/b.5137413/k.A9A1/Existing_Stores.htm

Another option the neighborhood could consider is making improvements to existing stores to enable them to sell fresh food. Public Health Law and Policy, a nonprofit organization, has studied corner stores in low-income urban areas extensively, and suggests that store owners and fresh food advocates work together to rectify the problem.[90] Together, the store owner and the advocate work to make improvements to the store so that healthy food can be sold there. Improvements include adding refrigerator units, improving the nutritional profile of the foods already offered, and tapping into locally grown sources of food, such as the forthcoming community gardens or urban agriculture site. Making improvements to an existing store is less expensive and less complex than constructing a new store, PolicyLink advises. There are several small convenience stores located around NPU-G that currently do not have fresh, healthy food, but could, using this method. The *Healthy Corner Stores* report suggests that linking these existing-store changes to a larger neighborhood revitalization project can yield positive results. Thus, we stress the importance of upgrading some of the existing, poorly equipped stores in the neighborhood, in addition to creating new stores.

LOCATION

We propose the development of a small retail area across the street from West Highlands, on the north side of Perry Boulevard, as shown below in Figure 38. Here, there are several vacant parcels of land, which are cleared and ready to be developed. There were streetscape improvements made to Perry Blvd when West Highlands was built, so a developer would not have to incur those costs. There is a MARTA bus stop at the southeastern corner of the proposed development.

In addition to a grocery store/farmer's market in this retail center, complementary businesses might be spurred to locate here as well: a restaurant, laundry facility, drug store, a bank branch, etc. This area can serve to fill the "everyday retail" needs that residents of West Highlands and other western-NPU neighborhoods have.

[90] Planning for Healthy Places (December 2009). Healthy Corner Stores: The State of the Movement. Public Health Law & Policy. p. 5. Retrieved 1 December 2010 from http://www.phlpnet.org/php/products/healthy-corner-stores

FUNDING

Our goal in developing solutions to bring grocers to NPU-G was to select strategies that do not involve tax breaks, since NPU-G needs to create additional property tax revenue and sales tax revenue. This is another reason why we propose the site along Perry Boulevard—this area lies in the Perry-Bolton Tax Allocation District (TAD). TAD funds can be used for grants for capital costs, etc., and property owners pay normal property taxes, but the incremental increase in property tax is deposited into a special fund for the payment of redevelopment costs. We recommend that the developer of the retail center use TAD funds to finance the project. In addition, New Market Tax Credit funds (which is an income tax credit and does not affect property tax or sales tax revenue coming to the community) might be able to be used to address the lack of fresh food access in NPU-G. The Atlanta Development Authority, as the designated Community Development Entity, can receive these funds to make investments in low-income communities.[91]

FIGURE 38: LOCATION OF GROCERY STORE

Source: Author's creation on Google image

[91] U.S. Department of the Treasury: New Markets Tax Credit Program. http://www.cdfifund.gov/what_we_do/programs_id.asp?programid=5

A national resource may also soon be available to NPU-G. The Reinvestment Fund, PolicyLink and The Food Trust partnered to create the Healthy Food Financing Initiative, a proposal for national funding assistance for healthy food retailers. The program would offer loan and grant financing to help fresh food retailers overcome the high barriers to entry in underserved, low-income urban and rural communities. The program is modeled off of successful healthy food funding programs already enacted in several states. President Barack Obama's fiscal year 2011 budget proposal called for more than $400 million in investments in a national Healthy Food Financing Initiative.[92]

Other states and localities have been more proactive than ours in addressing the issue of food deserts. However, Atlanta has signaled its desire become more proactive on the issue in the recent Sustainability Plan. NPU-G's extreme food dessert conditions warrant prioritization by the city.

[92] The Reinvestment Fund (2010). A Healthy Food Financing Initiative: An Innovative Approach to Improve Health and Spark Economic Development. Retrieved 1 December 2010 from http://www.trfund.com/financing/realestate/NFFFI.html.

STREET FOOD AND FOOD CARTS

To supplement the proposed grocery stores, farmer's market, and restaurants, we also recommend the use of food carts and food trucks, commonly known as "street food" vendors. Although street food vendors are not as common in Atlanta as they are in cities such as New York, Los Angeles, or Portland, Oregon, there is a growing movement to bring food trucks and food carts to the streets, sidewalks, and parks of Atlanta. Street food has a variety of benefits: it creates great opportunities for small business development, provides delicious wide choice of food options to a large customer base, and as importantly, fosters a sense of place and community by bringing people together.

FIGURE 40: PUSH-CART EXAMPLE

Source: Atlanta Street Food Feasibility Study

FIGURE 39: FOOD TRUCK EXAMPLE

In addition to start-up costs such as food trucks and carts that meet health code standards, there are a few other challenges that proprietors face when establishing a street food business – in particular, there are state, county, and city ordinances which dictate where, when, and how a street vendor can operate. The Atlanta Street Food Feasibility Study, completed in September 2010 for Central Atlanta Progress and the Atlanta Street Food Coalition, is a reliable resource detailing the challenges involved in establishing a street food business in the City of Atlanta, as well as the potential economic impacts and benefits of these

businesses.[93] The Atlanta Street Food Coalition is a trade association campaigning for "safe, affordable, and legal access to street food in Atlanta" and is an additional resource for information regarding street food business operations in the City of Atlanta.[94]

Several proposed developments and projects could serve as great locations for street vendors in NPU-G, These include the mixed-use developments at former ADA housing sites and retail nodes along Perry Boulevard and Donald Lee Hollowell Parkway. In addition, parks and greenways are potential areas for locating food carts and food trucks. At the present, the AIP would be a good location for street vendors to target during lunch hours. While NPU-G likely lacks adequate population density or neighborhood attractions that could currently support street vendors outside of AIP, planning for street vendors should occur simultaneously with green space and recreation activities.

[93] Cutno, M., Adriaenssens, Z., Douangchai, V.L. (2010, September). Atlanta Street Food Feasibility Study. Retrieved from http://www.scribd.com/doc/37485115/Atlanta-Street-Food-Feasibility-Study
[94] Atlanta Street Food Coalition. (2010). Atlanta Street Food Coalition: About. Retrieved from http://www.atlantastreetfood.com/about

PUBLIC ART

Public art can be used as a way to celebrate local culture, beautify an area, and provide interesting focal points. The City of Atlanta's Office of Cultural Affairs maintains an inventory of public art around the city, but none has been placed in NPU-G.[95] Bringing public art to NPU-G will serve to enhance recognition and community attractiveness, community pride , the development and preservation of their cultural identity, and creation of a sense of place.

THE PUBLIC ART MASTER PLAN

Atlanta has a public art master plan, which details many aspects of public art, its funding, locations, etc. in the city of Atlanta, which will be discussed more specifically below. One of the principle findings of the research conducted for the Public Art Plan was that there is strong interest in Atlanta neighborhoods for public art. Communities view public art as a means of addressing urban blight and providing creative outlets for at-risk youth, as well as and expressing the culture of their community.[96]

FUNDING

One way that public art is paid for is out of expenditures on city projects, called percent-for-art funding. With percent-for-art funding, 1.5% of all municipal capital construction projects must be set aside to use to fund public art. The art can either be located on the site of the project, or pooled into a separate account to be used for off-site projects. Percent-for-art monies exist to provide artists with public art commissions, and funds can be made available for education, training and professional development.

Off-site art projects can be funded through the percent-for-art fund from pooled monies from smaller capital improvement projects that may not have the capacity for a public art project. It is usual and customary for off-site percent-for-art projects to be located on property owned or leased by the city.

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[95] The City of Atlanta. Public Art in Atlanta: Atlanta Office of Cultural Affairs http://ocaatlanta.com/public-art

[96] The City of Atlanta (2001). Public Art Master Plan. City of Atlanta Department of Parks, Recreation and Cultural Affairs, Bureau of Cultural Affairs. Retrieved from http://ocaatlanta.com/files/images/PublicArtWebsite/splashdocs/ATLPublic_Art_Master_Plan.pdf

There is also a Public Arts Trust Fund set up to allow corporations, foundations and individuals to donate to public art. The Public Arts Advisory Committee acts as the reviewing agency for funding public arts projects with private funds.

Since it is likely that there will not be a capital improvements project in the pipeline for the land next to the river, the Public Arts Trust Fund and off-site project fund are options where community leaders should look to fund public art commissions or community art projects.

Locations of Public Art

River Trail

Putting public art along the river trail has the potential to tie the river and the industrial park back to the rest of the neighborhood. Cultural references to the industrial and agricultural historic nature of the area can be the theme of the art, and would celebrate the community's heritage. Public art along the trail will also help to draw visitors to the trail and to the river. It can also provide a place for local community artists to showcase their work. There have been public art installations along trails already in the city of Atlanta, with the Art on the BeltLine project as a prime example. This was a series of visual installations and performance art along the trail. An example for NPU-G could be a competition among artists to create tree platforms that would act as seating areas along the trail.

Nodes and Intersections

Public art is often used at gateway intersections, or at significant sites in a neighborhood. Public art could also be incorporated into the proposed roundabouts and nodal development we have suggested. Bend, Oregon has been recognized for its innovative use of public art in a series of roundabouts in the community.[97] The sculptures, a project of Bend's Art in Public Places initiative, are diverse, and reference the history and culture of Bend.

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[97] Public Art. Arts Central, The Arts and Culture Council for Central Oregon. http://www.artscentraloregon.org/publicArt.php

FIGURE 41: EXAMPLES OF PUBLIC ART IN BEND, OR



Source: Bend Roundabout Art http://www.geovative.com/GeoTours/tourView.asp?6174Vq=GIJH

PARKS

Parks are popular locations for pieces of public art. The closest piece of public art to NPU-G is located in Center Hill Park, just outside of the neighborhood:

FIGURE 42: PUBLIC ART IN CENTER HILL PARK

Source: Atlanta Office of Cultural Affairs

ENVIRONMENT AND NATURAL AMENITIES

As stated earlier in this report, the area within the boundaries of NPU-G is home to a very unique environment seldom found within the rest of the city of Atlanta. In addition to underutilized privately owned land, NPU-G is home to the now-closed Gun Club Landfill, which for decades, received much of the city's garbage and other assorted waste products. While the initial use for this tract has led to large-scale local pollution that usually deters development, the closure of the landfill has provided extraordinary opportunities for a revitalization of the area. In addition, the presence of the Chattahoochee River provides a natural feature, which until recently, has been ignored in the historical development of the metropolitan Atlanta area. Our proposals to safely develop the Gun Club Landfill and open up the Chattahoochee River waterfront are designed for local residents and visitors to take advantage of these natural resources as well as protect the integrity of the local environment.

The environmental capital of NPU-G is one of the greatest resources the neighborhood possesses. In addition to a large amount of greenspace and a pastoral character, the neighborhood possesses two important waterways, the Chattahoochee River and Proctor Creek. The main focus of our proposal is to highlight the natural amenities provided by the waterfront, and use greenspace to provide greater pedestrian connectivity throughout the neighborhood. In doing so, we seek to provide passive recreational uses that could be enjoyed as a community and provide incentive for visitor traffic to the NPU, increasing visibility and providing economic benefit.

GUN CLUB LANDFILL

The Gun Club Landfill is located in the heart of NPU-G. Owned and monitored by the City of Atlanta, the landfill covers 163.23 acres.[98] The landfill operated as a municipal landfill, and the waste it contains is comprised of household trash and ash. Built before the institution of Subtitle D design standards, the landfill does not have a liner sufficient to meet modern requirements.[99] Additionally, the landfill does not have as wide of a buffer as is required for modern landfills, therefore the City of Atlanta may potentially be required to purchase surrounding areas of the landfill to maintain compliance with Georgia EPD (Environmental Protection Division) standards. See Figure 43, below, for an image of the extents of the landfill.

Landfill gas monitoring and groundwater monitoring wells are interspersed along the perimeter of the landfill, further limiting potential passive redevelopment. In 1998, vinyl chloride, a toxic component of plastics, was detected above the EPD standard of 2 parts per billion at a depth of 30 feet in the groundwater at two of the monitoring wells.[100] As of 2002, the vinyl chloride has only been detected at one monitoring well, however the possibility of groundwater contamination may provide additional incentive for the City of Atlanta to purchase land for the provision of a wider buffer. It should be noted that vinyl chloride contamination at depths of 30 feet will not affect the public water supply, nor is it likely the contaminated water will come in contact with the public in any way. However, given the production of methane as well as other combustible gases, the landfill is highly unsuitable for any intensive human use. Therefore, a proposed solution is to use the landfill for public education, illustrating the detrimental environmental aspects of landfill creation as well as how current landfills may provide resources.

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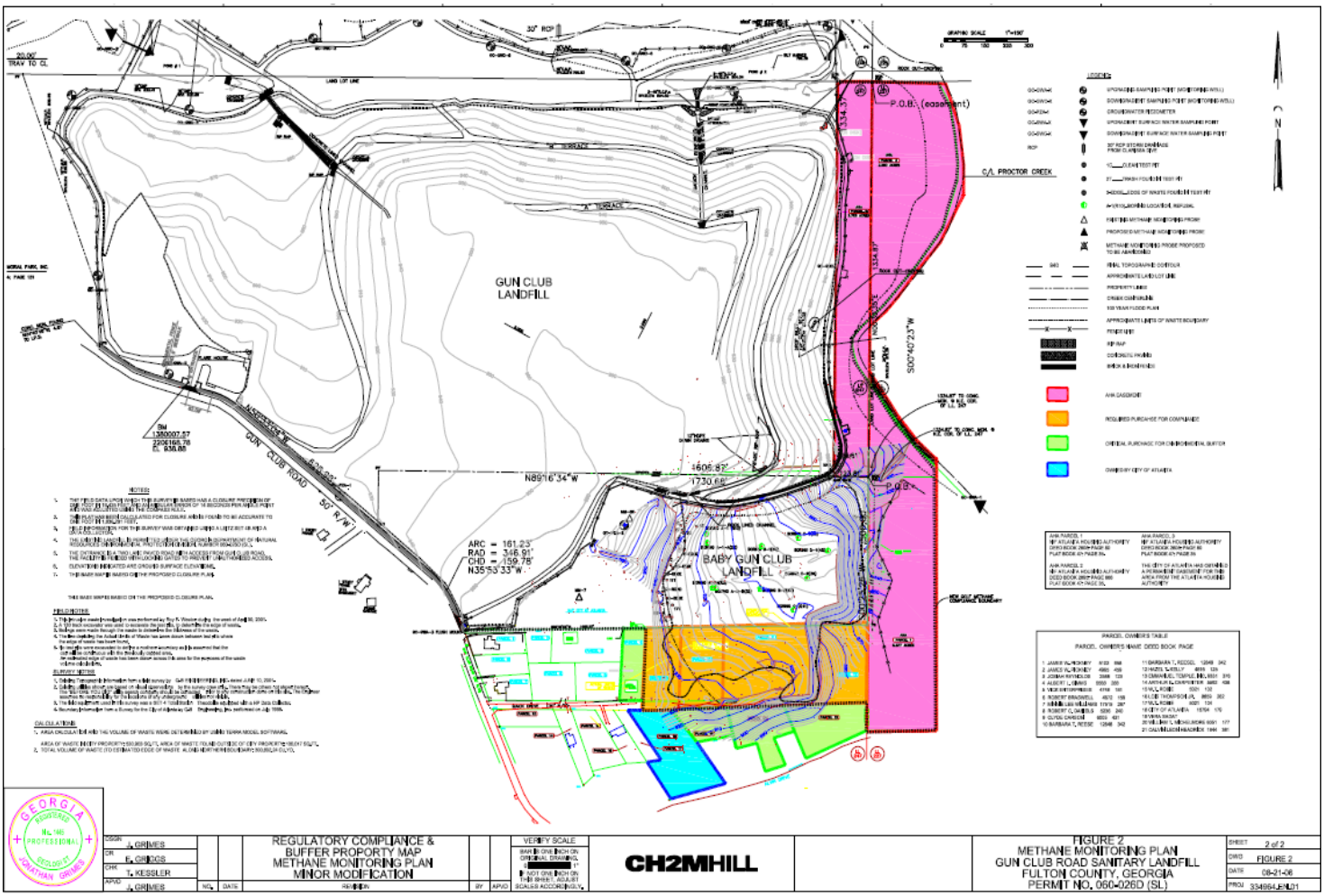
[98] The City of Atlanta (2006). Regulatory Compliance and Buffer Map Methane Monitoring Plan Minor Modification. (CH2M Hill) Atlanta, GA.

[99] Libscomb, Carla <clipscomb@atlantaga.gov>(2010, October 28). Gun Club Landfill Follow Up Questions. [personal email] (2010, October 28).

[100] The City of Atlanta, Department of Public Works. (2005). Fact Sheet Groundwater Impact at Gun Club Road Landfill. Atlana, GA;

FIGURE 43: GUN CLUB LANDFILL EXTENT

Source: City of Atlanta Public Works Department



EDUCATIONAL COMPONENT

Developing an educational trail around the landfill appears the best option for this highly restricted site. The proposed trail will be comprised of four stations, each demonstrating and explaining a different component of renewable energy and sustainability, and connected via a walking trail. If possible, the educational landfill trail could be connected to the proposed Proctor Creek Greenway for increased connectivity and access.

Methane: Landfill gases provide the opportunity for energy production. However, the Gun Club Landfill has passed peak productivity of energy producing landfill gases such as methane. Including an educational component explaining methane harvesting could help raise awareness, and ensure that methane is harvested efficiently from other landfills. The decomposition of landfill material without oxygen, as occurs in a capped landfill, produces methane (CH_4).[101] Methane is considered a gaseous fuel, and can be combusted for thermal generation or used in gas turbines to provide electrical power. Most landfills, including Gun Club Landfill, have vents where methane is released and burned. The gas must be disposed of because its nature, toxic and combustible, makes it a public safety hazard. The critical steps for education are:

1) Prevent Land Fill Gas (LFG) from developing by recycling, thereby preventing landfill formation
2) All landfills currently in existence will continue to produce LFG, so burn it all before it escapes to the atmosphere
3) Use LFG for energy production, and while doing so, illustrate the benefits of using methane for energy

Small Wind: Although Georgia does not have optimal wind patterns for large-scale wind turbines, small wind power is a viable option. However, the public is generally unaware of the capabilities of small wind. Therefore, an installation illustrating how small wind can be used is suggested to complement the landfill's educational potential. This would ideally be composed of one or two turbines with an explanation of how small wind can be incorporated by homeowners.

[101] Masters, G.M., & Randolph, J. (2008). Energy for Sustainability: Technology, Planning, and Policy. Island Press

Recycling: This proposal suggests two components to the recycling educational piece. First, a demonstration regarding recycling facts and products made from recycled materials. Second, a community recycling site is suggested. Highlighting that recycling can prevent future landfills would be the purpose of including a recycling station, while a recycling site could encourage community members to increase recycling efforts.

Solar: Although the entire proposal for the landfill includes a large scale solar array, a small scale photovoltaic cell is suggested as well. In addition, any lighting on the educational trail should be powered by solar panels.

SOLAR ARRAY ON THE LANDFILL

Due to the extremely limited options offered by the landfill, active use is unreasonable, however the large acreage offers opportunities rare within the city limits. The landfill would be ideal for a large scale solar demonstration, which solar companies may find profitable as most demonstration opportunities are residential or small scale, and large area options in visible areas are often prohibitively costly due to land values. Not only could a solar array on Gun Club Landfill gain visibility for NPU-G, it would also provide a tie in for economic development of green technology jobs and allow the potential for onsite training.

To become eligible for one of the optimal sources of funding, EPA grants for landfill redevelopment, the landfill would have to be ceded from the City to a 501c3, or non-profit group, that does not lobby.[102] The non-profit group would then also be responsible for maintaining monitoring and any upkeep or maintenance the landfill may require. If the land transfer did occur, the Gun Club Landfill would potentially be eligible for programs like the RE-Powering America's Land Program, an EPA initiative that gives technical assistance for renewable energy feasibility studies. However, only about one site per region (the region for consideration is 8 States) is chosen per year to receive this type of study. The EPA tries to choose the sites for study based on imminent renewable energy a development potential which the Gun Club Landfill site's most viable option is solar. As far as could be determined by the studio's research, any eligibility for federal funding would require the City of Atlanta to transfer the landfill to a non-profit group.

[102] Olson, Margaret A. <olson.margaret@epamail.epa.gov>(2010, November 22). Gun Club Landfill Renewable Energy Follow Up. [personal email] (2010, November 22).

SMART HOUSE AND ENERGY AUDITING

At this location, we see the opportunity to education homeowners, builders, employers, and citizens about steps that can be taken to make homes more sustainable. This can be accomplished through the development of a "smart" or "green" house that incorporates the use of renewable and alternative energy sources as well as energy saving appliances, and, also, through the "weatherization" or "retrofitting" of an older home that is typically found in NPU-G and other older Atlanta neighborhoods. The first part of this vision can be realized through partnerships with green builders in Atlanta and through federal funds and grants that are targeted at sustainable development. The Southface company is a key example of the type of organization that could assist in this program. Southface is a leading developer in sustainability in the built environment and has been working diligently with organizations in Georgia, the Southeast, and the nation to build and create a sustainable future for everyone.[103] Its core objectives and development experience could easily be paired with the proposed development for the landfill, taking the environmental objectives one step farther, to enhance the sustainable learning center we are aiming to create.

A major contributor to sustainability in Georgia is the Georgia Environmental Finance Authority (GEFA), an organization that assists local governments in improving and maintaining environmentally friendly communities and systems. The specific GEFA program that is of interest for NPU-G is the Low-Income Weatherization Assistance Program (WAP). This Program was established in 1976 in response to the nation's energy crisis, and is the primary supporter of low-income individuals who need assistance with energy conservation and efficiency in their home environments. WAP is available to residents in all of Georgia's counties and the weatherization adheres to Department of Energy guidelines.[104] As with Southface, GEFA's primary goal is to improve quality of life by providing resources for increased sustainability. This program is specifically appropriate for NPU-G because a majority of the housing stock is between 50 and 80 years old; there are many simple improvements that can be made to the residences in the community that would lower utility costs, allowing low- and moderate-income families to reduce the operation costs associated with living in older single or multi-family housing.

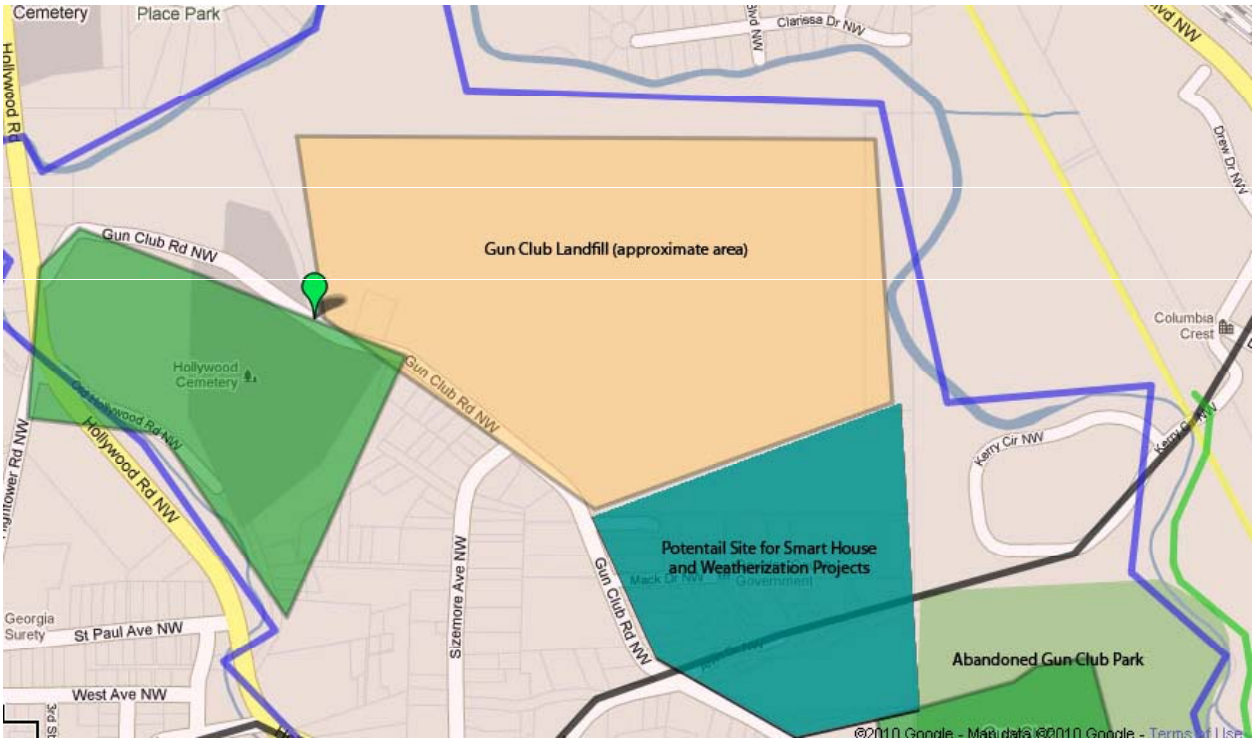
[103] Southface.org "Welcome Letter"

[104] www.gefa.org, Georgia Environmental Finance Authority

In harmony with our general interests of promoting and increasing awareness of the many environment and sustainability challenges faced by America, we recommend the development of two residential projects, a Smart House and an older home retrofit. The structures and necessary infrastructure will ideally be located on the vacant land between Gun Club Landfill and the closed Gun Club Park (see Figure 44 for location). They could be incorporated into the operations and maintenance of the Landfill development, and there are older homes nearby that can either be relocated or added to the project based on their existing locations. The vacant parcel also has access to Proctor Creek. The proximity of this parcel to the proposed alternative energy park mentioned above, Proctor Creek, Gun Club Park, and many residents lends itself to many different future uses including an expansion of the environmental awareness initiatives to be developed around the City operated landfill, a campsite, or the addition of a community center or Boys and Girls type organization. Single-family residences that can be used as examples of the WAP Program also surround the site. Further, there is enough land surrounding both the landfill and the proposed project to provide parking and access without displacing residents from the area.

Another benefit of the addition of the “smart house” and “weatherization” is that demand for energy auditing employees has been growing. This piece of our green landfill project not only contributes to the education of NPU-G and Atlanta’s residents, but it can be used for workforce development. There are many alternative energy sources available to the Atlanta area, including geothermal, solar, and wind. The ultimate goal is to position NPU-G strategically within the City of Atlanta Sustainability Plan.

FIGURE 44: SMART HOUSE LOCATION



Source: Author's creation on Google image

RETENTION POND

The Atlanta Development Authority (ADA) and Fulton County Development Authority originally purchased parcels fronting the Chattahoochee River between Donald Lee Hollowell and 285 as part of the Atlanta Industrial Park land parcel. However, according to public record, the land was not developed and remains untouched.

Discussion with the ADA has indicated there is a desire to passively develop the land as an amenity for the community. In conjunction with the Sustainable Atlanta plan, and Atlanta's Greenspace Acquisition initiative, the parcels appear promising for a passive recreation plan.

Further research of the parcel has revealed a large retention facility as well as an access road surrounding the pond, designed for maintenance access. In addition, the land is bounded to the West and North by railroads that service the Atlanta Industrial park, and appears to have a Southern Power utility easement. The land is hindered by legal restrictions resulting from the Chattahoochee Corridor Plan (CCP), which encompasses the entirety of the parcels. The limitations include buffer zones, a strict limit on the amount of paved surface on the parcels, and stipulations on how land may be used. The ADA land is well positioned geographically to serve as a landmark entrance to NPU-G, as the land is directly adjacent to the boundary and is bounded to the South by Donald Lee Hollowell Parkway, a major connector between Fulton County and Cobb County.

Further support for redevelopment of the land is provided in the form of proposed projects on the Cobb County side of the Chattahoochee River. The proposed developments are for active, residential projects and may provide additional demand for passive recreational river front use.

RESTRICTIONS

The buffers and development prohibitions listed in the CCP prevent almost any active development in this area. As a further limit on what is definitively listed in the legislation, impervious surface is interpreted as "any manmade surface."[105] However, a project that improves water quality and improves the stream bank

[105] (1998). Chattahoochee Corridor Plan Summary. *Atlanta Regional Commission.*1-8.

would be subject to more relaxed restrictions than a development project that did not meet environmental objectives. Accordingly, further study of the detention pond was undertaken.

Although due to the fact that the pond was constructed in the 1980's, design or maintenance records for the existing facility could not be obtained, a site visit was done to determine existing conditions.[106] Given the age of the site, it is highly eligible for a retrofit to obtain compliance with existing stormwater management regulation. Further, the shift in demand from a peak volume control, which was the regime under which the pond was constructed and requires storage capacity of a set maximum, to water quality and flow volume controls make a retrofit a suitable solution. The impaired status of the Chattahoochee River and overall degradation of the stream bank suggest that a retrofit to address suboptimal conditions would be well received by permitting authorities.

WET POND

The retention pond on the ADA land is more properly a wet pond. Although the stormwater paradigm that promoted mass construction of retention ponds has been superseded by more modern solutions, wet ponds can still function effectively for water quality treatment. The design of wet ponds, with at least some portion of water being retained indefinitely for most storm events, allows an estimate of 80% removal of pollutants. The constituent pollutants that comprise the 80% figure are: TSS (Total Suspended Solids): 80%, Total Phosphorous: 50%, Total Nitrogen 30%, Fecal Coliform: 70%, Heavy Metals: 50%.[107] Generally, particulate pollutants will settle in the first 12 hours of retention, but greater time is necessary for fine particles, suggesting 24 hours as the minimum detention time for TSS removal.[108] Wet basins are the most effective method for significant removal of nitrogen for stormwater, with a load reduction of 50% demonstrated over a 3 day period.[109] However, pollutant removal at the 80% threshold requires water

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[106] Chambers, L. Atlanta Site Development Group Manager, Email. 11/14/2010.

[107] (2001). Georgia Stormwater Manual. *Atlanta Regional Commission. 2(3),* 1-22.

[108] Barr Engineering Co. (2010) Retention Systems Extended Storage Ponds. *Metropolitan Council. Minnesota Urban Small Sites BMP Manual. 3*, 267-280.

[109] Barrett, Michael E., (2005) Performance Comparison of Structural Stormwater Best Management Practices. *Water Environment Research, 77*(1), 78-86.

input to be steady and continuous. Thus, in flood events water is not detained long enough for pollutant removal, particularly if wet ponds are not properly maintained as is the case in NPU-G.

The existing retention pond provides a simplistic solution for meeting the ARC's (Atlanta Regional Commission) stormwater objectives and creating a community amenity. The stormwater infrastructure in Georgia relies heavily on Combined Sewer Overflow systems, and a retrofit to the system can reduce Chattahoochee River inputs without disabling the entire system; providing an alternative to costly underground storage or tunnels that would otherwise be required to hold overflow event capacity. Retrofits performed on a small scale, without consideration of the entire subwatershed, are easily adaptable to different circumstances, such as the retention pond, and require less design than an entirely new system. An educational component may also provide a strong incentive for retrofits over new systems. Innovations in the field can raise public awareness, and garner attention for degraded watersheds, if retrofits are applied correctly and are effective. A wet pond retrofit in NPU-G, occurring soon after the announcement of Mayor Kasim Reed's Sustainable Atlanta Plan, could help gain funding for designs that help meet the Plan's initiatives of water quality improvements.

Given the under maintained or acknowledged status of the existing pond, it is likely that any attempt to improve the detention facility will be considered as beneficial over the current situation. The existing conditions of the retention pond suggest a combination strategy described below.

PROPOSED DESIGN CHANGES

The retention pond as it exists now is highly simplified and lacks any of the design evolutions used in current retention systems. To maximize water quality and volume control while minimizing costs, a three pronged approach is proposed for the existing pond. For structures beyond the retention pond, a deliberate emphasis on biological controls is intended, as this approach is deemed to be the most sustainable as well as in line with the policies of Sustainable Atlanta, and current stormwater trends.[110]

[110] (2001). Georgia Stormwater Manual. *Atlanta Regional Commission. 2(3),* 1-22.

WATER COVER

As mentioned by the Georgia Stormwater Manual "[a] mechanism for pollutant removal is uptake by algae and wetland plants in the permanent pool." The conditions of the existing pond prevent significant water flow, and the probability of contaminated runoff from the adjacent Atlanta Industrial Park, in conjunction with overflow into the major waterway of the Chattahoochee River, makes including a vegetative cover an obvious water quality solution for the retention pond.

To realize the greatest possible benefits from vegetative mechanisms, a water cover of duckweed (*Lemna minor*) is suggested. The species is native to Georgia, and grows proficiently without human assistance. The benefits of using water cover include suppressing algae growth, removal of heavy metals from the water column through plant uptake, odor reduction, and discouragement of insect breeding.[111] It should be noted that permanent removal of heavy metal pollutants and nutrients requires duckweed to be harvested, and ultimately removed from the environment.

FLOATING ISLANDS

Although the exact depth of the existing retention pond is unknown, the range is likely between 5 to 8 feet.[112] While duckweed provides adequate cover for the majority of the surface of the water, more significant aquatic plants prefer depths of 15-30 cm, and would be ineffectual without a structural support in this situation.[113] A potential solution that would provide a medium for plants to grow in without changing the depth of the pond is constructed islands. Human-made islands tethered to the bottom of the pond and seeded with aquatic plants yield water quality benefits through filtering, increase evaporation from the pond, and provide habitat for aquatic animals, thereby furthering the aesthetic benefit of the pond.[114]

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[111] Kerr-Upal, M., Seasons, M., Mulamoottil, G., (2000). Retrofitting a Stormwater Facility with a Wetland Component. *Journal of Environmental Science and Health. Part A 35*(8), 1289-1307.

[112] Barr Engineering Co. (2010) Retention Systems Extended Storage Ponds. *Metropolitan Council. Minnesota Urban Small Sites BMP Manual. 3*, 267-280.

[113] Kerr-Upal, M., Seasons, M., Mulamoottil, G., (2000). Retrofitting a Stormwater Facility with a Wetland Component. *Journal of Environmental Science and Health. Part A 35*(8), 1289-1307.

[114] Ibid

FIGURE 45: FLOATING ISLANDS

Source: http://nationalaquarium.wordpress.com/category/aquatic-life/

SHORELINE VEGETATION

The Georgia Stormwater Manual does not describe the required 25-foot buffer for the pond beyond the prohibition that woody vegetation is not allowed within 15 feet of the toe of the embankment or 25 from the spillway structure, but does encourage aquatic vegetation in general.[115] Shoreline vegetation can limit sedimentation into the pond, reducing the amount of maintenance necessary and prolong the period of time between pond dredging. Vegetation can also provide a buffer between shallow areas of the pond and walkways accessible to the public, clearly delineating off limit areas. If landscaped and maintained properly, shoreline vegetation can prove to be one of the most aesthetically pleasing aspects of a retention pond's design.

[115] (2001). Georgia Stormwater Manual. *Atlanta Regional Commission. 2(3),* 1-22.

Combining Best Management Practice Systems

The simplified and largely uncomplicated nature of a retention pond offers many opportunities for retrofit design. However, it also limits the benefits conferred by more complex Best Management Practices (BMPs). Therefore, a mixed system is suggested to achieve the goals of:

- maximizing flow path and circulation through the system
- reducing the velocity of final outputs
- utilizing vegetation to improve water quality and increase evapotranspiration
- filtering and trapping common pollutants
- supporting groundwater recharge.[116]

Considering water quality and volume controls, water volume is primarily controlled by the retention pond, but increasing the infiltration of the current retention pond system is suggested by incorporating a bioretention site adjacent to the site. Wetlands are also suggested as an additional mechanism to improve water quality and contribute to volume control.

Wetlands

Although constructed wetlands can be costly, the wetland designation of the existing pond, the surrounding wetland dense area, and the need for water quality control with additional water storage compels wetland inclusion in our proposed case study design. Wetlands function to improve water quality in a multitude of ways. Biologically, the expanse of water surface wetlands provide enables microbial communities to more effectively to reduce nitrogen and increase oxygen content. Providing an extended path for runoff water also decreases velocity, reduces sedimentation, and allows longer time periods for gravitational filtering.[117]

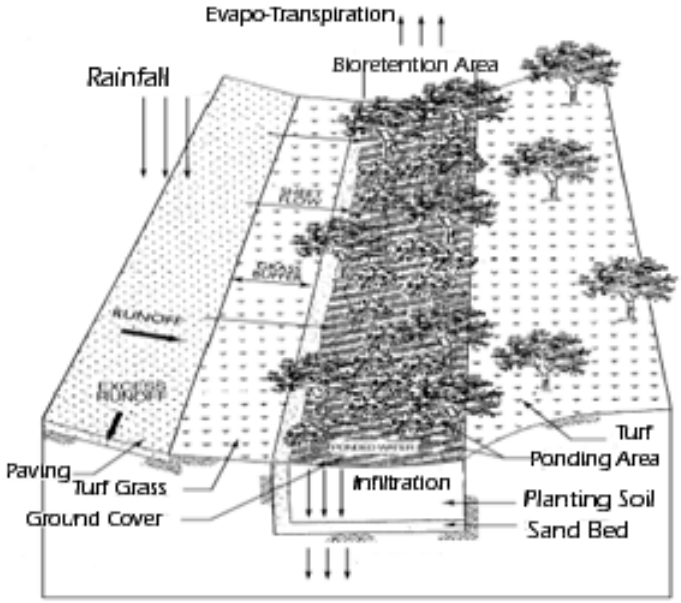
[116] (2001). Georgia Stormwater Manual. *Atlanta Regional Commission. 2(3),* 1-22.

[117] Barrett, Michael E., (2005) Performance Comparison of Structural Stormwater Best Management Practices. *Water Environment Research, 77*(1), 78-86.

BIORETENTION

The effluent from wet basins tends to be of fairly consistent quality, and operates primarily as a function of the concentration of pollutants residing in the permanent pool before the beginning of the runoff event.[118] Given the importance of residual pollutant concentration from the permanent pool in runoff concentration, an additional infiltration system is suggested to decrease the velocity of runoff from one-year storms and the capacity from 25 to 100 year storms. Instituting a bioretention basin to the East, between the Atlanta Industrial Park (AIP), and the pond, could utilize existing vegetation and ecosystems to reduce runoff from the impervious parking lots and buildings in the AIP complex. The bioretention basin could also provide significant pollutant removal of grease and oil as the runoff was filtered through soil and treated with microbial populations.[119]

FIGURE 46: BIORETENTION BASIN ILLUSTRATION



Source: http://isu1.indstate.edu/terc/stormwater/lesson%20template/M3L7/M3L7Bioretention.htm

[118] Barrett, Michael E., (2005) Performance Comparison of Structural Stormwater Best Management Practices. *Water Environment Research, 77*(1), 78-86.

[119] Barr Engineering Co. (2010) Retention Systems Extended Storage Ponds. *Metropolitan Council. Minnesota Urban Small Sites BMP Manual. 3*, 267-280.

Inspection and Maintenance

A primary reason to perform retrofits on the site selected is the current lack of maintenance, inspection, or accountability on the part of City of Atlanta for the retention pond. With the proposed design changes to the pond, maintenance on a monthly schedule should include vegetation upkeep and debris removal, while annual maintenance should include repair of deteriorated structures and vegetation replacement or harvesting as needed.[120] On a longer time scale, sediment should be removed from the system and water flow should be maintained as necessary.

Maintenance on the wetlands should only be necessary the first several years, as a properly designed system should become self maintaining after achieving steady state.[121] The bioretention basin should also only require minimal maintenance if constructed properly, but the soil filter may need to be refreshed if pollutants accumulate beyond the natural capacity of the system.[122]

Boat Put-In

The National Park Service, through the Georgia Conservancy, has expressed interest in consolidating a map of the boat put-ins available on the river. Discussion with the Chattahoochee Riverkeeper has revealed the closest boat put-ins to be 8 miles to the north upstream, and 15 miles to the south downstream. The average kayaker or canoeist excursion is usually a maximum of 7 miles, making the ADA land ripe for a boat put-in.[123] The potential location for a boat put in was analyzed by considering the quality of the stream bank in current conditions, accessibility to parking, and proximity to the proposed trail.

[120] (2001). Georgia Stormwater Manual. *Atlanta Regional Commission. 2(3),* 1-22.

[121] Kerr-Upal, M., Seasons, M., Mulamoottil, G., (2000). Retrofitting a Stormwater Facility with a Wetland Component. *Journal of Environmental Science and Health. Part A 35*(8), 1289-1307.

[122] Barr Engineering Co. (2010) Retention Systems Extended Storage Ponds. *Metropolitan Council. Minnesota Urban Small Sites BMP Manual. 3*, 267-280.

[123] Ulseth, J. Office of the Chattahoochee River Keeper, Phone Interview, 11/03/2010

The proposed boat put-in should be constructed from gravel and sand, and should have a low impact on the existing environmental conditions. In fact, if the put-in is at the intersection of Proctor Creek and the Chattahoochee River, there is a potential for the boat put-in to decrease erosion. The put-in will be capable of allowing canoeists and kayakers to put in and get out on the ADA land. However, motorized boats will not be able to utilize the boat put-in. Restraining the put-in to human powered boats was chosen due to the hydrologic considerations of the existing stretch of the river, which can be described as a straightaway with rapid flowing water. Any concrete structure or structure requiring pylons would significantly disturb the river bank as furthering the likelihood it would be washed away during flood events, and eroded due to daily wear and tear.

Rail Tracks

The rail tracks bounding the riverfront property limit accessibility to the river front property. While the rail tracks are seldom used, Norfolk Southern's proprietary attitude towards rail track usage and connectivity necessitate an alternate access to the property. The grading necessitated by the track construct, although not usable for pedestrians or cyclist, provides a basic foundation for trail construction.

Accessibility

Accessibility to the ADA land will prove to be a major stumbling block to passive development of the land. Currently, there is no paved public access to the land, and unpaved access is restricted to a service road that circles the detention pond. The boundaries provided by the rail prohibit the construction of roads for future access, and traffic along Donald Lee Hollowell is too fast moving to easily suggest a pedestrian road crossing. The proposed solution to address the limited accessibility is to obtain an agreement for flex parking with members of the AIP, with a connecting pedestrian and bike path to the parking areas.

Donald Lee Hollowell Parkway Frontage

If properly developed, the passive use of the ADA land fronting the river can provide a significant benefit as an entry point into NPU-G. Currently, the frontage consists of a forested portion closest to the river,

which would have to be retained to maintain compliance with CCP and two small commercial properties adjacent to the detention pond access road. The buildings are located on a parcel owned by ADA and the structures could easily be converted to a welcome center and feature a large sign for the riverfront area.

AIR QUALITY

Air quality concerns associated with the heavy freight traffic, the nearby rail yards, and the AIP have been raised in NPU-G. According to the Clean Air Task Force, the average lifetime diesel soot cancer risk for a resident in Fulton County is 1 in 1,178, which is 582 times greater than the EPA's acceptable cancer level of 1 in a million[124]. In addition, the 20-county Atlanta region is in nonattainment according to the 8-hour ozone standard as defined in the National Ambient Air Quality Standards (NAAQS). Nonattainment areas must have and implement a plan to meet the standard, or risk losing some forms of federal financial assistance.

The rail yards near NPU-G (shown in Figure 47) dwarf the neighborhood and create the northern boundary of the NPU. Several studies have shown rail yards to be a source of diesel particulate matter (PM) emissions. PM consists of both microscopic and submicroscopic particles (solid or liquid) that exist in the atmosphere, as well as multiple pollutants. Specifically, the concern near rail yards is PM2.5, which refers to particulate matter with an aerodynamic diameter less than 2.5 mm. Several strategies for reducing PM associated with rail yards include idling control, switcher replacement, and selective catalytic reduction (SCR) retrofits.

[124] http://www.catf.us/diesel/dieselhealth//county.php?site=0&c=13121

FIGURE 47: RAILYARDS NEAR NPU-G

Source: Google

Any potential regulation of pollutants in NPU-G is subject to federal and state laws, including interstate commerce regulations.[125] In addition, the economic benefits associated with the freight traffic and rail yards must be evaluated and compared to the potential health impacts. Consequently, additional research on the air quality effects of the nearby rail yards and the AIP should be conducted to evaluate the effects of diesel-fine particulate matter on the neighborhood residents.

SEWER AND STORMWATER

NPU-G is served by a separated sewer system. Stormwater ultimately finds its way into Proctor Creek. Sanitary sewers are part of the Proctor Creek Sub-basin; sewage flows by gravity to a single pipe, which then conveys sewage to the RM Clayton treatment plant.

The pipe, which drains the Proctor Creek Sub-basin, is considered “capacity limited”, which means it may constrain development at some point in the future. Currently, however, the bottleneck pipe can handle an additional 194,000 gallons of sewage per day – enough to support the construction of at least 800 new

[125] http://latimesblogs.latimes.com/greenspace/2010/09/air-pollution-railroads.html

single-family residences within the NPU. In addition to the main sewage pipe, other sewer truck lines may pose a limit on development. However, this constraint is harder to quantify; the Department of Watershed would need to do readings specific to a proposed development site in order to determine how much sewage it could be allowed to contribute (personal communication, Denis Morris, Atlanta Department of Watershed Management, Monday, November 8, 2010).

Unfiltered stormwater piped away from NPU-G streets, buildings, and parking lots only exacerbates water-quality problems in Proctor Creek. Adopting Low Impact Development (LID) strategies could help mitigate this problem. LID methods involve filtering out pollutants picked up in stormwater using vegetation, and slowing runoff in order to allow it to soak into the ground. Many different types of LID stormwater infrastructure exist – most of which involve some sort of grading of the soil and planting vegetation – these are generally termed "green infrastructure."[126]

A plan for stormwater infrastructure within this area should be developed by the Atlanta Department of Watershed Management and funded by the City of Atlanta.

[126] Personal communication, Susan Rutherford & Tracy Hillick, Atlanta Department of Watershed Management, Monday, October 18, 2010.

CEMETERY REHABILITATION

One of NPU-G's most valuable assets is its topography and informal greenspace, some of which is occupied by old cemeteries rich in history and gravesites dating back to the late 1800s. However, these cemeteries -- Hollywood, Magnolia, and Monte Vista -- are in very poor repair and are a the overall neglect of NPU-G.

FIGURE 48: HOLLYWOOD CEMETERY

Source: Erin Rosintoski

Pictures from Hollywood Cemetery are shown above. The picture to the left shows the "non-perpetual care" sign and the general state of disrepair of the cemetery. The picture to the right shows one of the old gravestones. The following quote sums up our sentiment on the state of the cemeteries:

> Old cemeteries are markers of human history; of all the love, sweat, toil, tears, joys and triumphs of the past. They are links to family we never knew, they are sources of history and they tell us a great deal about ourselves culturally and socially. Therefore, there is nothing sadder than to come across crumbling, decaying and near gone relics of cemeteries and to feel helpless to do anything about this loss of heritage. Yet, there are indeed things that can be done to restore orphaned cemeteries and return this heritage to current communities. In doing so, we all regain a sense of our own place in time and history.[127]

[127] http://www.wikihow.com/Restore-an-Abandoned-Cemetery

Georgia State law specifies little in the way of resources and responsibilities for local municipalities and therefore there is source of pressure for maintaining NPU-G's cemeteries that are in disrepair. State Code provides that a city or county can assume the role of operating and maintaining an abandoned cemetery. There are limited resources available for the repair and upkeep of these cemeteries, but preserving the historic and cultural value is of great importance to many organizations locally and nationally. Federal legislation regarding the sale and operation of family plots when these cemeteries began to be used in the late 1880s operated under "fee simple" sale. Additionally, many of the descendants of families buried here cannot be located, leaving a gap in the maintenance of a majority of these plots. The Jewish Family & Career Services in Atlanta has shown an interest in seeing Hollywood cemetery rehabilitated. A partnership with Jewish Family & Career Services and involvement from elected officials would seem to be the most promising avenue for its restoration and maintenance.

CONCLUSION

For decades, the area that encompasses NPU-G has largely been ignored in planning and development by both local government and private business. As a result, what now exists is a patchwork of small scale, scattered pockets of development. Moreover, a series of decisions by the public sector made the area a warehouse for locating landfills, low income households and industrial space. Despite the thousands of residents that live in NPU-G, this combination of neglect and placement of investment deterrents has resulted in shaping a community that lacks access to some of the basic amenities that other neighborhoods in Atlanta enjoy. Thus, an affirmative approach directing coordinated public and private investment in NPU-G is needed. Just as a series of adverse public decisions were made that served to repel investment in the area, a series of investment catalysts will need to be implemented in order to help the neighborhood realize its full potential.

Fortunately, NPU-G possesses assets in the form of untapped opportunities within its natural landscape, and, vacant land associated with the aforementioned disinvestment that are ready to be redeveloped. With the closure and demolition of the four housing projects located within the area, a blank canvas of possibilities have opened up for substantial investment which will improve the quality of life of not only residents of NPU-G, but also for the city of Atlanta. Additionally, the community has unique natural amenities such as Proctor Creek, access to the Chattahoochee River, and a vast network of open space that could be leveraged in a way that creates a truly unique destination within the City of Atlanta. Throughout our planning process, we have attempted to identify these and other amenities that the residents both currently enjoy and would like to see developed in the future. This has, in turn, influenced our recommendations for creating economic and community development initiatives while maintaining the character of NPU-G.

Our plans for the area consist of taking advantage of its natural resources by establishing trails along the Chattahoochee River and Proctor Creek. These would serve multiple purposes, including creating additional green space, providing a local amenity to fuel economic development, and improving connectivity within the NPU. Regarding the latter, increased connectivity is a broader theme that touches on several components of the recommendations, from improving connectivity within the NPU and to the

City of Atlanta, to ensuring that the vacant AHA developments are integrated within the existing fabric of the area. The redevelopment of the housing project sites provides a tremendous opportunity to create a Live-Work-Play transformation of NPU-G due to their size, geographic distribution, and blank slates as vacant sites. Reconfigurations of the built environment, including improving connectivity within NPU-G and between NPU-G and the rest of Atlanta are a key focus of our recommendations. Also key are the social planning issues of improving educational and employment opportunities to address residents' long standing concerns while providing a missing link of upward mobility. Finally, additional strategies that combine environmental sustainability, economic development and quality of life issues are the proposed fresh food and urban agriculture initiatives.

NPU-G should be seen as a prime candidate for redevelopment to help the City of Atlanta achieve its stated objective of becoming known as a sustainable city. Its unique natural amenities, not often found so close to a central business district, can be a key vehicle by which promote and showcase sustainability. In order for the City to meet its stated goal of becoming a national model for sustainability, a concerted effort to make bold planning decisions will be needed. Atlanta has a history of envisioning and implementing cutting edge, large scale redevelopment projects, and NPU-G should be considered as a prime candidate for these types of initiatives. In doing so, the City of Atlanta would move closer to achieving status as a world-class city while the residents of NPU-G would finally reap the benefits of living in a community where they can live, work and play while achieving upward mobility.

APPENDIX

ACRONYMS

AHA: Atlanta Housing Authority

AIP: Atlanta Industrial Park

APS: Atlanta Public Schools

BLS: United States Bureau of Labor Statistic

CCP: Chattahoochee Corridor Plan

DOL: United States Department of Labor

EPD: Environmental Protection Division of the Georgia Department of Natural Resources

GITP: Green Industry Training Program

HUD: United States Department of Housing and Urban Development

LEED: Leadership in Energy and Environmental Design

LEED-ND: Leadership in Energy and Environmental Design for Neighborhood Development

MARTA: Metropolitan Atlanta Rapid Transit Authority

OED: Oregon Employment Department Workforce and Economic Research Division

SWEET: Southeast Weatherization and Energy Efficiency Training Center

WSC: Workforce Strategy Center

GLOSSARY

Accommodation and Food Service Sector: a group of businesses that provide customers with lodging and/or preparing meals, snacks, and beverages for immediate consumption

Biological controls: the use of biological systems to perform beneficial quality improvements in infrastructure

Boat put-ins: graded slopes of the riverbank where non motorized boats can get in and out of the river

Buffer: an area of land that serves as a protective barrier between two or more distinct land uses, or between developed areas and environmentally sensitive lands

Bus: a transit mode comprised of passenger vehicles with rubber tires operating on selected routes and schedules over roadways. Vehicles are powered by diesel, gasoline, battery, electricity or alternative fuel engines contained within the vehicle.

Bus rapid transit (BRT): a high speed bus system operated within an exclusive right-of-way. BRT incorporates exclusive transitways, modern stations, on-board fare collection, high-tech vehicles and frequent service. BRT systems can be built incrementally and designed for vehicles, rather than people, to transfer from local bus routes to the high speed lines.

Bus routes: predetermined paths on streets or guideways with designated stops or stations

Busway: exclusive two-lane roadway reserved for buses and emergency vehicles

Combined sewer overflow systems: an infrastructure solution in which stormwater and sewage can mix, leading to contamination of stormwater

Community Development Block Grant (CDBG): a grant issued by the U.S. Department of Housing and Urban Development to fund local community development activities such as affordable housing and infrastructure development

Competency model: a tool which identifies the knowledge, skills, and abilities necessary to successfully perform critical work functions in an industry or occupation

Congestion: a traffic condition characterized by slower speeds, longer traffic times, and a large number of vehicles on the road

Conservation easement: a voluntary, legally binding agreement between a landowner and a qualified land trust or municipality that permanently limits development on a piece of land in order to protect natural or historic resources

Corridor: a long, generally slender land area with an existing or planned transportation facility at the center. The general purpose of a corridor is to define a study area for future transportation planning improvements.

Crosswalk: portion of a roadway where pedestrians are permitted to cross the roadway. A crosswalk can be marked or unmarked.

Density bonus: an incentive tool provided to developers, allowing them to develop at a higher density for providing below market-rate units as part of a residential development

Effluent: water coming out of a water management facility

Energy auditing: evaluating energy consumption in a home or business to determine potential cost savings

Energy efficiency: the energy used for a given service (heating, lighting, etc.) or level of activity. Increasing the energy efficiency of a manufacturing facility would reduce the amount of energy that the manufacturer would use to create a product whereas increasing the energy efficiency of a building would reduce the amount of energy required to heat, cool, or provide lighting for the building.

Evapotranspiration: a biological process in which plants take in water through their roots and release it through their leaves, similar to the cycle and results of perspiration in humans

"**Eyes on the Streets**": built environment where residents are able to interact and oversee the activity within their communities, thus deterring crime that is associated with inactive, unwatched communities

Fee simple: the purchase of all property rights associated with a parcel

Fixed guideway: a mass transportation facility using and occupying a separate right-of-way or rail for the exclusive use of mass transportation vehicles or other high occupancy vehicles.

Flex parking: a parking system that allows parking by multiple groups of people in the same lot by scheduling parking, a common solution would be office employees during the day and event parking at night

Floating islands: platforms made of buoyant material and planted with aquatic plants that provide habitat for aquatic species and improve water quality

Food desert: an area where residents have little or no access to healthy and affordable food

Grade separated crossings: facilities such as overpasses, underpasses, skywalks or tunnels that allow pedestrians and/or motor vehicles to cross a street at different levels

Green innovation: a new product or service which benefits the environment or conserves natural resources

Green workforce development: a job training program which trains individuals for jobs within industries that produce goods or provide services that benefit the environment or conserve natural resources

Headway: the time interval between vehicles moving in the same direction on a particular route

Healthcare and Social Assistance Sector: a group of businesses that provide health care and social assistance to individuals. Examples include: Offices of Physicians, Dentists, and Mental Health Professionals.

Heavy rail transit (HRT): a transit mode typified by an electric railway with a high volume traffic capacity. HRT will always be grade-separated due to a powered "third" rail, and will have platforms for boarding. The MARTA Rail System is a local example of an HRT system.

Hope VI: HUD federal program aimed at eradicating severely distressed public housing through physical, managerial and social improvements to the community

Horticulture training: a job training program that provides an individual with the necessary skills to grow produce for sale at a farmers market or cooperative grocery store

HVAC: Heating, Ventilating, and Air Conditioning system

Hydroponic agriculture: growing food and/or flowers without the use of soil

Impact fee: a municipal fee charged to new or proposed developments designed to help cover the cost of infrastructure built by the municipality to serve the new development

Impervious surface: a surface covered by artificial structures such as pavements (roads, sidewalks, driveways, and parking lots) or buildings that are impenetrable, eliminating rainwater infiltration and groundwater recharge. Impervious surfaces also create polluted stormwater runoff that may contaminate streams and groundwater.

Industrial incubator space: a place that encourages the development of new industrial businesses such as solar cell manufacturing

Infiltration: the rate at which an amount of water seeps into the ground

Interstate highways: limited access roadways designed for high speed travel over long distances. Interstate highways generally connect large metropolitan areas or serve as a "by-pass" around a large metropolitan area.

Landfill gas (LFG): the combination of methane, carbon dioxide, and water vapor produced in landfills as a byproduct of the bacterial decomposition of organic materials. It can be captured and used as a source of energy to create heat or electricity, much like natural gas combustion.

Land banking: the practice of purchasing undeveloped land with the intent to hold the land until it is profitable to sell for more than was initially paid. When practiced by municipal land banks, such as the

Fulton County / City of Atlanta Land Bank Authority, land banking can also assist with the assemblage of properties for neighborhood redevelopment, greenspace development, or infrastructure right-of-way.

Level of service (LOS): a qualitative measure that characterizes operational conditions within a traffic stream and their perception by motorists and passengers. The descriptions of LOS categories characterize traffic flow conditions in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort and convenience. The LOS categories range from "A", which is full free flow traffic conditions, to "F" which is complete gridlock. LOS is C signifies full but constant traffic flow with only occasional interruptions.

Light rail transit (LRT): a transit mode typified by an electric railway with medium volume traffic capacity compared to heavy rail. Light rail transit is characterized by passenger rail cars operating individually (or in short, usually 2 car trains) on fixed rails in a shared or exclusive right-of-way

Manufacturing Sector: a group of businesses engaged in the transformation of materials, substances, or components into new products for sale

Mixed-income development: a residential development that includes units available to families of varying incomes

Mode: refers to a means of transportation (auto, bus, rail, pedestrian, bicycle, etc.)

National Environmental Policy Act (NEPA): federal legislation signed into law in 1970 that promotes environmental protection. The law requires that federal agencies prepare a statement of environmental impact to accompany any action that is "major", "significant", or "federal".

Nuisance: an unreasonable use of property which causes inconvenience or damage to either individuals or to the general public. Nuisances can include noxious smells, noise, burning, and a host of other bothersome activities.

Parcel: a piece of land

Particulate pollutants: pollutants in water that are not completed dissolved and will settle out of the water through gravitational filtering

Peak volume control: a practice used to manage stormwater by attempting to plan for, and provide storage for, the highest predicted amount of water produced during a single storm

Pedestrian: a person who travels on foot or who uses assistive devices, such as a wheelchair, for mobility

Photovoltaic solar cell: a solid state device that converts the energy of sunlight directly into electricity using the photovoltaic effect

Pond dredging: a maintenance procedure whereby the sediment lying on the bottom of the pond is removed to prevent the pond from drying up

Public transportation: as defined in the Federal Transit Act, transportation by bus, rail, or other conveyance, either publicly or privately owned, providing to the public general or special service (but not including school buses, charter or sightseeing service) on a regular and continuing basis. Public transportation is also synonymous with the terms mass transportation and transit.

Quality of Life Bonds: bonds issued by the City of Atlanta to support capital improvements that support neighborhood livability, pedestrian mobility and a general improvement of the quality of life for urban residents. The principal and Interest are payable from an ad valorem (value-based) tax levied on all taxable property within the City.

Retail gap: the amount of shortfall in retail options and retail space provided compared to the community's needs and buying power

Retail Trade Sector: a group of businesses engaged in selling merchandise to individual consumers, generally without transforming the merchandise

Retention pond: a manmade pond where stormwater is directed and held.

Revegetation: the process of replanting vegetative material (grasses, trees, etc.) in an area that has been stripped of vegetation. Revegetation is often necessary to control erosion and assist in stormwater filtration.

Right-of-way: real property rights (whether by fee simple ownership, by easement or by other agreement) acquired across land for a purpose (i.e., transit facilities, roadways, sidewalks and utilities)

Roadway capacity: the maximum traffic flow obtainable on a given roadway using all available lanes, usually expressed in vehicles per hour or vehicles per day

Roundabout: circular intersection that is yield controlled on entry and has geometric features to slow the speed of entering and circulating vehicles

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU): Federal legislation that authorizes the Federal surface transportation programs for highways, highway safety, and transit for the five-year period 2005-2009

Sidewalk: portion of a roadway intended for pedestrians

Transit (traffic) signal priority (TSP): a traffic management technique which gives special treatment to a certain class of vehicles at signalized intersections

Stormwater: water produced from rainfall that eventually is returned to rivers and streams after treatment

Subtitle D design standards: the criteria landfills built now must meet, according to law, including plastic liners and specific size land barriers around the dumping site

Tax allocation district (TAD): a finance tool in a specified area which uses the area's income from property taxes to pay for redevelopment projects within the area's boarders. Redevelopment costs are financed through future property taxes generated by the resulting new development. Outside of Atlanta, this tool is most commonly referred to as tax increment financing (TIF).

Throughput: the number of vehicles in both directions on a roadway

Tracts: an extended area of land

Transfer of development rights (TDR): a land use regulatory tool in which development rights are transferred from one property (the sending property) to another property (the receiving property). The system is designed to allow the owners of properties designated for low-density uses, such as land conservation or historic preservation, to transfer (sell) their development rights to other properties so that they are not unfairly penalized by the development restriction on their land.

Transit oriented development (TOD): a term used for urban development that encompasses a direct and planned access to transit facilities

Transportation enhancement: projects that include providing bicycle and pedestrian facilities; converting abandoned railroad rights-of-way into trails; preserving historic transportation sites; acquiring scenic easements; mitigating the negative impacts of a project on a community by providing additional benefits; and other projects

Urban agriculture: the practice of growing and harvesting food and/or flowers within the urban boundary of a city or town

Urban infill: redevelopment of vacant or underutilized properties in developed urban cities

Vegetative cover: a covering for wet ponds that consists of plant growth

Water quality control management: a current practice in stormwater management in which plans are made to ensure water quality meets a certain standard after it is treated

Weatherization: retrofitting or updating a home to protect it from sunlight, precipitation, and wind to reduce energy consumption and associated costs

Wet pond: a retention pond that is meant to contain water at all times

Wetland: wetlands are areas where water covers the soil or is near the surface of the soil either all year, or during varying parts of the year. Swamps, marshes, and bogs are all types of wetlands.

Wholesale Sector: a group of businesses engaged in selling merchandise to industrial, commercial, institutional or professional users, generally without transformation of the merchandise

workforce development: workforce development and/or training refers to community efforts to train individuals for specific jobs or industries. Training may cover everything from soft skills (work ethic, attitude, getting to work on time) to basic skills (literacy, knowledge of math and science) to specific job skills (carpentry or Web site development).

yielding: the action of producing something (i.e. produce, tax revenue)

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